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JOURNAL OF EDUCATIONAL RESEARCH

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JOURNAL *of* EDUCATIONAL RESEARCH

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THE CALIFORNIA ADOLESCENT GROWTH STUDY[1]

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University of California

Now in its sixth year, the investigation here reported has been characterized by the following policies and procedures:

1. The use of a fairly large group of school children, chosen primarily with reference to availability for an extended period of study. The sample, drawn originally from six schools, covers a wide range of socio-economic status.

2. The collection of quantitative, comparable measurements for each case in the sample, beginning in the last year of elementary school and continuing through senior high school.

3. Emphasis upon physiological and morphological aspects of development, as well as upon psychological data relating to abilities, interests, attitudes, activities, and status in the group.

4. In the study of behavior, emphasis upon observational records, supplemented by self-report, measures of reputation, and interviews.

5. Detailed examination of age changes in the various aspects of development, by analysis of individual growth curves, as well as through the study of group changes.

6. The utilization of data for cumulative profile studies of individuals and for the analysis of individual growth curves, as well as for mass statistical research.

7. A study of socio-economic factors, home regime, and of relationships within the home.

It is recognized that in many respects the data suffer limitations for an understanding of the dynamics of development, particularly in view of our incomplete knowledge of the latent significance of certain features

[1] For making this study possible, acknowledgments are due to the Spelman Fund, the General Education Board, the Oakland Public Schools, and also to the clerical and statistical assistance provided through SERA projects 409 and 432, and WPA projects 4428 and 5696.

of behavior, and our limited access to fundamental material in the personal history and in the psycho-social background. This failure to use "analytic" in addition to more directly descriptive techniques in data collection has been due chiefly to practical difficulties, at the time the study was initiated, of including such methods in a research program aimed at scientifically verifiable results.

Below is an inventory of the principal fields of data collection. The interval of measurement has been six months in the case of most of the individual procedures, twelve months in the case of group tests, and, in the case of interviews and observational records, has varied according to requirement and opportunity. The principal sample of 215 cases has now (December 1, 1937) shrunk to approximately 160, mainly due to families moving to other districts; this however has not appreciably affected the representativeness of the sample. The group is about evenly divided between boys and girls. Group testing procedures have included from 150 to 200 additional cases each year. A number of other samples of school children have from time to time been utilized for control purposes.

Physical examinations: Examinations have been made by physicians each term since January, 1932, when the subjects were in the low fifth and high sixth grades. Records are based upon routine medical inspection of skin, eyes, ears, nose, throat, teeth, superficial lymph nodes, genitalia, and skeletal alignment. Special attention is given to the appraisal of physical changes which indicate the velocity of maturation; physical handicaps and indications of faulty regime are noted, and ratings assigned to posture, muscular development and other characteristics which permit a scaled classification.

Anthropometric measurements: With the physical examinations a schedule of 23 body measurements is obtained. These include, in addition to weight, height and sitting height, a series of body diameters (bi-acromial, bi-iliac, bi-trochanter, head and chest breadth and depth) and a series of trunk, arm and leg circumferences. In these measurements, provision is made for independent duplicate records by two examiners.

Body photographs: With a camera built for this purpose, front, side and back photographs are taken under standardized conditions as to distance and lighting. This graphic record now includes, for each individual, 12 seriatim pictures which can be used in the study of age changes in various features of gross morphological pattern.

Optometric records: Eye examinations include comprehensive measure-

ments of refractive characteristics of the eyes, acuity, muscle balance, fusional processes, perimetric measurements, and photographic records of eye-movements in reading. (Three tests at six-month intervals, beginning in grade 8.)

Roentgenograms: X-ray records of hands and knees have been obtained at six-month intervals; due to lack of a suitable instrument this was begun somewhat late (spring of 1935). The records are utilized in the measurement of skeletal age, in terms of the Todd standards.

Metabolic measurements: Basal metabolic rate has been determined for a so-called "physiological sample" of 50 boys and 50 girls. On a six-months schedule beginning in the spring of 1933, three measurements have been taken of each case, by the open circuit method, with repetition under comparable conditions on the following morning. The obtained samples of respired air permit the determination of rate of oxygen consumption, carbon dioxide production, total calories per hour, and deviations from accepted norms.

Basal measures of pulse, blood pressure, respiration rate, and temperature: With the same sample of cases as that used in the study of age changes in metabolism, measures have been taken during the resting condition, on two successive mornings; these include, on each day, records of pulse, systolic and diastolic blood pressure, respiration rate, and mouth temperature.

Measurements of physiological changes under stimulation: By means of a recording apparatus and experimental cabinet developed for this purpose, photographic registry of autonomic reactions is made continuously during a 40-minute period of stimulation. In addition to a standard series of auditory and other physical stimuli, motion pictures are used, association words, interview questions, and a number of special stimulus schedules. The records cover pulse rate and limb volume changes, respiratory changes, body movement, and alterations in skin resistance measured by two pairs of electrodes applied at different parts of the body. This experimental program has been limited to the "physiological sample," with the remainder of the adolescent group reserved for control studies. To date each subject has participated in a series of 13 experimental periods, occurring as a rule on two successive days each semester.

Reaction to exercise: Metabolic, respiratory and cardiovascular recovery curves are obtained following (a) severe exercise, or (b) measured amounts of exercise with an ergometer. Formerly given at six-month

intervals, these tests are now on an annual schedule. Standard Schneider tests—vital capacity, breath-holding, etc., are also administered.

Urine analyses: These include qualitative tests for albumin and sugar on first morning urine samples, and quantitative analysis for amount of creatine, creatinine and total nitrogen excreted. Administered on the same schedule as the metabolic measurements.

Physical ability tests: Dynamometer strength tests (grip, pull, thrust) have been given at six-month intervals since the spring of 1932. Beginning in grade 8, a series of tests of bodily control and postural adjustment was added, and also track tests involving speed, power, or accuracy in gross muscular functions.

Motor skill tests: These include (1) reaction time (simple reaction to sound, right and left hand); (2) serial eye-hand coördination (speed of movement, recorded by Ceneo interval timer); (3) steadiness in thrusting (Seashore steadiness test); (4) speed of rotary movement (speed drill, Stanford motor skills unit); (5) bimanual coördination (Brown spool packer); (6) rhythmic eye-hand coördination (synchrometer); (7) finger reaction to visual stimuli (serial discrimeter). Formerly given at six-month intervals, the motor tests are now on an annual basis.

Intelligence tests: The Terman Group Test A and B has been administered at two-year intervals alternating with the Kuhlmann-Anderson Group Test. Additional tests (non-cumulative) include the Thorndike C.A.V.D., the Stanford-Binet, and the revised Stanford-Binet.

Learning tests: These include semi-annual tests of verbal learning (paired associates); trial and error learning (with a variety of electrically operated stylus mazes, body mazes, and punchboards); and annual tests of rational learning (with a multiple choice device constructed for this purpose).

Achievement tests: New Stanford Achievement tests of reading, arithmetic reasoning, arithmetic computation, language usage, literature, history and geography have been given annually from the sixth through the ninth grade; two different forms were used on each occasion, at a two-weeks interval.

Teachers' ratings: As a means of obtaining continuing records of school achievement, ratings have been made in senior high school upon interest in school work, school achievement, and college aptitude.

Tests of interests and attitudes: A group test (ICW Interest Record) was devised to cover approximately 400 items under the headings of "Things to Own," "Places to Go," "Things to Do," etc. These are utilized for item analysis, and also yield pooled scores for a number of specific interests (social, intellectual, mechanical, athletic, etc.). Six annual administrations have been completed. In addition, tests appropriate for later age levels have been given in the senior high school (Strong Vocational Interest Test, and tests pertaining to religious and liberal-conservative attitudes).

Activity records: A group test (U.C. Activity Record) comprises a check list of items classified as "Things I did last week," "Where I went last week," "What I read last week," "Radio programs." (Given at intervals of 3 to 6 months, beginning in grade 9.)

Associates' ratings: A group test (Guess Who Test) includes 40 items, such as "Here is someone who doesn't like to talk very much," "Here is someone who is very friendly." The pupils in a given classroom nominate classmates for each item. Each pupil's score is in terms of frequency of mention. (Given annually, with an additional administration at end of elementary school and at end of junior high school.)

Miscellaneous personality measures:

1. Annoyance inventory. The revised Form B consists of 160 items divided in two equivalent forms. Ten categories are represented, including "sensitivity to sounds," "annoyance at personal infringements," etc. (Given at twelve-month intervals, with two forms administered two weeks apart.)

2. Adjustment inventory. A combined test, based on the Rogers Test of Personal and Social Adjustment and an Institute of Child Welfare Personality Schedule, is scored to yield measures of social adjustment, school adjustment, family adjustment, personal inferiority, generalized tensions, over-statements, fears, and physical symptoms. (Given annually.)

3. Rorschach test. Results are treated to yield a clinical summary and also scores in terms of Rorschach's classification. (Two administrations at a year interval, with some supplementary testing.)

4. Observational records. Ratings or codified observations of behavior in social situations are made by observers using a variety of special record forms. Incidental behavior is also recorded in all test situations and in physical examinations. Six-month intervals, in each situation.

5. Interviews. Comprehensive interview blanks have been prepared for use with parents, covering family history, socio-economic data, habits and daily regime of the subjects of the study. Interviews with the subjects have been conducted at annual or more frequent intervals by various members of the staff. Sections of the interview schedules are used in annual home visits.

Each of the above divisions of data presents material bearing specifically upon an inviting array of intra-disciplinary or "departmental" problems. Our principal interest, however, has been to assemble records in such form as to facilitate interdepartmental treatment and the study of interrelationships; we have been concerned with implications for developmental theory and, where such implications can be drawn, for individual guidance and education. Up to the present time the publication program has necessarily been confined in large measure to methodological reports and to minor studies. Among these are the following:

Jones, H. E. *The Personality Study of Adolescents.* National Research Council, Div. Anthropology and Psychology, 4th Conference on Research in Child Development (Washington: 1933), Appendix I, 1-11.

Davis, F. C., and Batalla, M. B. "A Life-Size Alley Maze for Children," *Journal of Genetic Psychology,* XLI (1932), 235-239.

Pryor, H. B., and Stolz, H. R. "Determining Appropriate Weight for Body Build," *Journal of Pediatrics,* III (1933), 608-622.

Carter, H. D., Jones, H. E., and Shock, N. W. "An Experimental Study of Affective Factors in Learning," *Journal of Educational Psychology,* XXV (1934), 203-215.

Batalla, M. B. "An Experimental Study of Children's Behavior in a Spatial Complex," *Journal of Genetic Psychology,* XLIV (1934), 127-138.

Stolz, H. R., and Jones, H. E. *Growth Studies and Studies of Emotional and Social Development.* Society for Research in Child Development, 1934, pp. 18.

Carter, H. D., Pyles, M. K., and Bretnall, E. P. "A Comparative Study of Factors in Vocational Interest Scores of High School Boys," *Journal of Educational Psychology,* XXVI (1935), 81-98.

Ogden, Eric, and Shock, N. W. *Circulatory Changes During Recovery from Intense Exertion.* Proceedings Society for Experimental Biology and Medicine, XXXIII (1935), 5-8.

Carter, H. D., Conrad, H. S., and Jones, M. C. "A Multiple Factor Analysis of Children's Annoyances," *Journal of Genetic Psychology,* XLVII (1935), 282-298.

Carter, H. D. "Effects of Emotional Factors Upon Recall," *The Journal of Psychology,* I (1935-36), 49-59.

Carter, H. D. "Emotional Correlates of Errors in Learning," *Journal of Educational Psychology,* XXVII (1936), 55-67.

Pryor, H. B. "Certain Physical and Physiologic Aspects of Adolescent Development in Girls," *Journal of Pediatrics,* VIII (1936), pp. 52.

Jones, H. E. *The Growth Study as a Psychological Method.* Society for Research in Child Development, 1935, pp. 7.

Jenss, Rachel M., and Shock, N. W. "A Mathematical Expression for Oxygen Consumption Following Violent Exercise," *American Journal of Hygiene,* XXIV (1936), 88-93.

Jones, H. E. *Convergent Trends in Psychology and Related Sciences.* Proceedings of the Twenty-fifth Anniversary Celebration of the Inauguration of Graduate Studies at U.S.C., Nov., 1935.

Batalla, M. B. *The Learning Curve and the Reliability of Learning Scores in a Body Maze.* University of California Publications in Psychology, VI (1936), 153-162.

Jones, H. E. "An Experimental Cabinet for Physiological Studies of Emotions," *Child Development,* VII (1936), 183-188.

Shock, N. W. "A Continuous Recorder for Obtaining Synchronous Curves of Physiological Responses to Stimuli in Human Subjects," *Child Development,* VII (1936), 169-182.

Shock, N. W. *Physiological Studies of Adolescence.* Report to the Advisory Board of the Institute of Child Welfare, University of California, September 25, 1936.

Stolz, H. R., Jones, M. C., and Chaffey, J. "The Junior High School Age," University High School Journal, XV (1937), 63-72.

Carter, H. D. "Emotional Factors in Verbal Learning: IV. Evidence from Reaction Time," *Journal of Educational Psychology,* XXVIII (1937), 101-108.

Carter, H. D., and Jones, H. E. "A Further Study of Affective Factors in Learning," *Journal of Genetic Psychology,* L (1937), 157-163.

Jones, H. E. "Reaction Time in Motor Development," *American Journal of Psychology,* L (1937), 181-194.

Jones, H. E., and Yoshioka, J. G. "Differential Errors in Children's Learning," (In press, *Journal of Comparative Psychology.*)

Carter, H. D., and Jones, M. C. "Vocational Attitude Patterns in High School Students," (In press, *Journal of Educational Psychology*).

COMPARATIVE DIFFICULTY OF THREE FORMS OF COMPUTATION TESTS

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THE first standardized tests in arithmetic computation were composed of several sections in each of which the examples all involved the same process. Such tests as those prepared by Courtis, Monroe, and Woody employed this arrangement. Woody and McCall introduced the mixed-fundamental form of test in which the examples are arranged in order of difficulty and independently of the process demanded by the calculation of the answer. The mixed-fundamental form of test has been widely adopted and, with slight modifications, it is used in most current tests in computation.

Several criticisms of the mixed-fundamental arrangement have been supported by observations regarding the frequency and the types of errors that pupils made. The advantage generally credited to such a form of test is derived from the similarity between the ordinary usage of arithmetic computation and the tasks composing the test. The older form of test was somewhat artificial. It was modeled after the usual drill exercises in which a single process was repeated through many examples. On the other hand, it has been stated that the constant shifting from process to process is not representative of the ordinary use of computation. Such shifting as may be used in problem solving is in response to a conceptual situation rather than to a symbol or word that precedes the example. One might suppose, on theoretical grounds, that the constant change of process would entail some interference and thus make such tests more difficult than other forms covering the same examples. Myers and Myers have contributed some data to show that errors are more prevalent in mixed arrangements of examples, but they administered the tests orally and their data do not determine the comparative difficulty of mixed-fundamental and other types of tests.[1]

Lessenger found that mistakes due to misreading the words preceding the examples accounted for as much as six months loss in age scores on

[1] Myers, G. C., and Myers, C. E. "The Cost of Quick Shifting in Number Learning," *Ohio State Educational Research Bulletin*, VII (1928), pp. 327-334.

the Stanford computation exercise. Specific training in the reading of the word-directions eliminated the loss, and the mean "actual" age score was practically the same as the "theoretical" age score, *i. e.*, the score based on examples solved correctly but not necessarily in the way that the directions indicated.[2]

In view of these criticisms and the data suggesting the greater difficulty of mixed-fundamental tests, a study was made in which three forms of computation tests were compared for difficulty. The relative difficulty of the three tests is only one element in an evaluation of them; but with constant length, uniform standards of scoring, and identical content, it is unlikely that there are significant differences in validity and reliability.

The three forms are hereafter referred to as Forms X, Y, and Z. Form X was a mixed-fundamental test, but the process to be employed was indicated by signs rather than by words. The items were arranged in order of difficulty, and the following examples illustrate the test as a whole.

Form X

			43
21	23	53	84
× 8	− 11	− 20	76

No signs were used to indicate the process where the process was evident from the numbers involved as, for example, in the fourth item of the above illustration.

Form Y was also of the mixed-fundamental type, with words designating the task to be performed.

Form Y

Multiply	Subtract	Subtract	Add
32	38	74	53
4	24	40	92
			78

Words were included even when the process was apparent from the arrangement of the numbers. The third form of the test, Form Z, contained four sections, one for each of the fundamental processes. In each section the examples were arranged according to difficulty.

[2] Lessenger, W. E. "Reading Difficulties in Arithmetical Computation," *Journal of Educational Research*, XI (1925), pp. 287-291.

The three forms were prepared from the three forms of the *Diagnostic Computation Scale*[3] so as to be of equivalent content. Scale I comprised the tests for the second, third, and fourth grades. Scale II, for the fifth, sixth, seventh, and eighth grades, is a continuation of Scale I but with examples of appropriate difficulty for the more advanced pupils. The three forms, X, Y, and Z, were mimeographed and administered in rotation in three Detroit parochial schools. The total number of pupils was 1026. The three tests were given on successive days and were marked according to the same standard of absolute correctness. The scores used in the comparisons are the numbers of examples correct. The rotation method holds constant whatever practice effect accrued from the tests.

The results obtained are shown in Table I. The data indicate that the three forms are of the same degree of difficulty since none of the means is significantly higher or lower than any other in the same grade. Form Y (mixed-fundamental—words) yields the highest mean in all grades except the second, where it would be supposed that the reading difficulty would be greater than in other grades. The differences between the highest and the lowest means in the seven grades are as follows:

TABLE I

COMPARATIVE DIFFICULTY OF THREE FORMS OF COMPUTATION TESTS

Grade	N	Form X			Form Y			Form Z		
		M	S.D.	S.D.$_M$	M	S.D.	S.D.$_M$	M	S.D.	S.D.$_M$
8	131	43.93	7.90	0.69	45.04	7.98	0.70	43.15	7.34	0.64
7	143	42.13	8.52	0.71	42.79	7.97	0.67	42.31	7.69	0.64
6	163	34.70	9.07	0.71	35.36	9.11	0.71	34.86	7.97	0.62
5	164	24.13	6.00	0.47	25.09	6.39	0.50	24.46	6.62	0.52
4	156	30.76	6.83	0.55	30.88	6.96	0.56	30.76	7.40	0.59
3	135	19.99	7.45	0.64	21.16	6.61	0.57	20.74	6.81	0.59
2	134	8.68	3.01	0.26	8.11	3.38	0.29	8.05	3.38	0.29

Grade	Maximum Difference	Forms
8	1.89	Y – Z
7	.66	Y – X
6	.66	Y – X
5	.96	Y – X
4	.12	Y – X; Z
3	1.17	Y – X
2	.63	X – Z

[3] Catholic Education Press, Washington, D. C.

Although Form Y yields the highest mean score in all but grade II, the differences are quite small; and even in the eighth grade, where the difference is 1.89 examples, it is only about three times the standard error of the difference. In terms of the norms on the test, none of the differences are appreciable. The absolute variability of the scores changes from form to form in the several grades and shows no such consistency as the means reveal.

These data show that under the conditions prevailing, the three forms do not differ significantly in difficulty when the measures compared are the mean scores of pupils in grades two to eight. It is quite true that individuals scored higher on some forms than on others because of their reading ability, attention to details, difficulty of the examples, and other factors. It will be evident that the difficulty of such tests is probably variable according to instructional emphasis on various arithmetic exercises. Similarly, pupils who have not been taught to read directions in such exercises will undoubtedly make many mistakes, as Lessenger found. However, it seems that when provision is made for teaching certain reading functions as integral parts of arithmetic, tests involving the reading of directions are no more difficult than those in which the examples are classified according to the process to be employed.

No difference appears when the mixed-fundamental test using words to indicate the computation process is compared with the same form of test using signs for this purpose. Again it is clear that the neglect of either in the teaching of arithmetic would presumably affect performance to some extent; but under such supposedly typical conditions as those in this experiment, the two methods of indicating the process are of equal difficulty. Many mistakes will be made in both cases through misreading words or mistaking signs. The results indicate that the use of mixed-fundamental tests does not result in lower scores and that either method of directing pupils to employ a given process yields the same average results.

ON ART APPRECIATION OF CHILDREN: II. PORTRAIT PREFERENCE STUDY

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INTRODUCTION

THIS study has been undertaken in continuation of a previous study.[2] It is part of an investigation of the creative and appreciative art abilities of children. The subjects of this investigation were the children who come to The Cleveland Museum of Art every Saturday morning.[3] As in the previous study it was through the collections of the museum (good sized, fairly clear color prints, facsimiles of hand-drawings and photographs of sculptures) that a satisfying variety of material could be used.

THE PROBLEM

The results of our previous study[2] show definite picture preferences at different age levels. In this portrait preference study we set out to investigate whether or not such definite preferences by age levels will also show when the subject presented is always the same. For this reason we used all portrait pictures in this investigation. If there are definite preferences, what are the motives which determine them? Are there differences as to age levels? Do the specially gifted children react as the average children do? How do colored pictures compare with uncolored pictures in these choices?

THE EXPERIMENT

The experiment was made with 523 children, aged 6 to 15. Of these, 479 were artistically average children and 44 were artistically specially gifted children,[4] aged 12 to 15. A few children included in the 15 year

[1] This work was carried out under a grant of the General Educational Board of New York, to the Educational Department of The Cleveland Museum of Art. It is based on a plan, proposed by Dr. Thomas Munro, Curator of Education of The Cleveland Museum of Art, to investigate the nature and growth of artistic abilities of children. I am greatly indebted to Dr. Munro for his interest, valuable discussions and other help.

[2] Lark-Horovitz, Betty. "On Art Appreciation of Children, I," XXI, *Journal of Educational Research* (October, 1937), pp. 118-137.

[3] The children with whom this experiment was made are children from a great variety of Cleveland schools, one third being nationalities other than American.

[4] See: "On Art Appreciation of Children I," XXXI, *Journal of Educational Research* (October, 1937), pp. 118-137. . . . The Specials are selected on the recommendation of their Museum teachers and are on trial for three months before belonging to the special group. The group is not uniform in its artistic work. There is a majority of noticeably superior children and there are a few whose ability exceeds the average children to a lesser degree. Nearly half of the average children who partook in this experiment are children who draw in the Galleries the year round. They have, therefore, as much or more opportunity to see different works of art than the Specials.

old group were aged 16 and 17. There were 237 boys and 242 girls in the average group; 23 boys and 21 girls in the special group.

In the endeavour to eliminate any adult choices the experiment was started with a preliminary selection from 261 pictures which were arranged in 5 groups.[5] Group I consisted of pictures of young women,

[5] List of pictures for the preliminary choices.

Legend:
choice of boys (younger group) - - - - - -
choice of girls (younger group) ———
choice of Averages (older group) s p a c e d l e t t e r i n g
choice of Specials (older group) X

GROUP I. YOUNG WOMEN (76 pictures)

B. Thorwaldsen: Vestal
Const. Meunier: Mine Girl
X G e o r g K o l b e : P r o f i l e
Georg Kolbe: En face

Greek, 4th c.: Goddess fr. Chios
Ben. da Majano: Isotta Malatesta
Italian, Sculpture: Duchess Sforza (15th c.) profile
Donatello: Unknown woman
X D o n a t e l l o : C e c i l i a , p r o f i l e
Chinese, Sculpture: Kuan Yin

Japanese: Yeishi: Courtesan
X J a p a n e s e : R i f u : A l a d y
Japanese, Hokusai: Lady
Japanese, Yeisho: Young Otatsu

John Lavery: Nora
William Strang: Picador's wife
M. McEvoy: Anna
Abbott H. Thayer: Young lady
Georges Rouault: Woman
Max Svabinsky: Lady in red
Augustus John: Lady Asquith
Charles Shannon: Lady in black
Marie Laurencin: Young girl
Franz v. Lenbach: Lady
Gustave Courbet: Irlandaise
Paul Gauguin: Woman
Paul Gauguin: Girl in red
John D. Ferguson: Girl's head
X G . L . B r o c k h u r s t : R a m u n c h i t a
Edouard Manet: Woman

Anders Zorn: Maja
D. G. Rossetti: Beatrix
Arnold Boecklin: Flora
J. B. C. Corot: Christine
H a n s T h o m a : F l o r a
James Whistler: White girl
P. A. Renoir: Marguerite

P. A. Renoir: Reading Girl
Theodore Chasserieau: Artist's mother
X J. A. D. Ingres: Madame Rivière
X J. L. David: Mlle. Charlotte

Frans Hals: Bohemian
P. P. Rubens: Young woman
F. J. Goya: Portrait
F. H. Drouais: Mlle. de Charolais
Wm. Hogarth: Shrimp girl
X J. B. Greuze: Milk-maid
T. H. Lawrence: Miss Baring
T. H. Lawrence: Mrs. Siddons

Giul. Bugiardini: Nun
Joos van Cleve: Eleonore of France
Velazquez: Lady with fan
X French painting: Mary of Scots
F. Clouet: Elisabeth of Austria
X C. Amberger: Afra

Hans Holbein: Magdalena
Hans Memling: Barbara de Vlaenderberch
Rogier van der Weyden: Young woman

Paris Bordone: Lady
X Raphael: Donna Velati
Andrea del Verrocchio: Young woman
Francesco dello Piero: Lady
Andrea del Verrocchio: Lady

Eugene Zak: Girl's head
Raphael: Girl's head
J. A. D. Ingres: Mme. Lego
J. A. D. Ingres: Mme. Depaulis
L. P. Menendez: Head of a woman
H. Holbein: Lady Vaux
X Venetian School: Head with braid
Leonardo: Profile
V. D. Weyden: Mary Magdalene
Duerer: Negress
Jan Vermeer: Head of girl
Rembrandt: Young girl
X Jan Vermeer: Lace maker

GROUP II. YOUNG MEN (50 pictures)

G. Janssen: Portrait of artist
Eug. Lucas the elder: Francisco Montes, bull fighter
Aug. John: Col. T. E. Lawrence
Wm. Orpen: British Airman
John S. Sargent: Lord Ribblesdale
K. W. Leighton: Sun-dance bustle
Van Gogh: Zouane
Ilya Repin: Wladimir Stassow
X Delacroix: Portrait of an artist
Ed. Manet: Artist's brother-in-law

Frans Hals: Merry fiddler
Van Dyck: Peter Snayers
Van Dyck: Francois Duquesnay
Thom Gainsborough: Gainsborough Dupont
Paulus Moreeles: Portrait of an unknown man
Van Dyck: Portrait of artist
Gilb. Stuart: J. S. Copley

Andrea del Sarto: Profile
X A. Graff: Self-portrait
J. A. D. Ingres: Portrait of Mr. Houdebourt

Hans Holbein: Earl of Surrey
Hans Burgkmair: Young man
Leonarda da Vinci: Self-portrait

Raphael: Portrait of a cardinal
X Gian Battista Moroni: The tailor
Piero di Cosimo: Florentine General

Filippino Lippi: Portrait of young man
Giotto: Head of Dante
Raphael: Portrait of the artist
Jan Gossaerr Mabuse: Philippe de Bourgogne

X Hans Holbein: Bonifacious Auerbach
Hans Memling: Martin van Nieuwenhove
Hans Memling: Supposed portrait of Niccolo di Forzore
Hans Maler zu Schwaz: Wolfgang Tanvelder

Hans Baldung Gruen: Portrait of young man

Egyptian Sculpture: Shek-el-beled
Roman Sculpture: Head of a man of time of Augustus
Cambodian Sculpture: Head of Buddha
Classical Sculpture: Herm-Bust of Alexander

Greek Sculpture: Bearded head of Priapus
Greek Sculpture: Laocoon: head of older son
X Ant. Canova: Damoxemus, the pugilist
Roman Sculpture: Caligula

Rob. Wlerick: Portrait of M. G. Lacroix
Const. Meunier: Miner with ax

X Georg Kolbe: Young man
Serge Yourievitch: Gouraghi

X Donatello: Bust of an unknown man; profile
Mino da Fiesole: Bust of a youth
Italian Sculpture: Bust of Giuliano da Medici

GROUP III. OLD PEOPLE (49)

Roman Sculpture: Portrait head of the republic era
Italian Sculpture: Bust of Benvenuto Cellini

X Greek Sculpture: Head of old man
Jules Dalou: Peasant woman
Bart. Buon: Bust of Francesco Foscara
Francesco da Giorgio: Francesco Sforza; profile
Donatello: Ginevra Cavalcanti

X Aristide Maillol: Renoir
Georg Kolbe: Old man

Federigo Zuccaro: Old woman
Hans Baldung Gruen: Saturn
German Master: Bearded man
Peter Oliver: Man with beard
J. A. D. Ingres: Cherubini
X Leonardo da Vinci: Self-Portrait

Japanese: Jyasolu; Daruma
Chinese, Kuan-hsiu: Arat
X Chinese: An arhat by 18th c. painter after Wu Tao-tzu

Ambr. McEvoy: Artist's mother
Wm. Forsyth: Old market woman
Fritz Boehle: Peasant woman
V. Van Gogh: Dr. Cachet
V. Van Gogh: L'Arlesienne
V. Van Gogh: Le paysan
Paul Cezanne: Portrait of the artist
W. M. Russell: Mr. Minney
Aug. John: Dr. Stresemann
Aug. John: Old Ledanois
Max Liebermann: Portrait of the artist
Helmer Mas-olle: Anders Zorn
Sir Wm. Orpen: Ferdinand Foch

Juan Vinc. Ribera: Egg dealer
Filippino Lippi: Portrait of old man
Andrea Mantegna: Ludovico Gonzaga
El Greco: Cardinal Nino de Guerara
Gio. Bellini: Doge Leonardo Lorendano
Wlad. L. Borovikovsky: Persian Prince
Gentile Bellini: Sultan Mahommed II
X Jopez y Portana Vincente: Francesco Jose de Goya

Rembrandt: Artist's mother
Thomas de Kayser: Portrait of woman
Breughel the elder: Head of peasant woman
Hans Memling: Portrait of old man
Gerard Dou: Rembrandt's mother
Rembrandt: Portrait of the artist
Jan van Eyck: Man with pink
Balthasar Denner: Study of old man
Cornelis de Vos: Abraham Grapheus
Hans Holbein: Erasmus von Rotterdam

GROUP IV. CHILDREN (44 pictures)

X Albert Marque: Premier pas
Donatello: Youthful St. John
Roman Sculpture: Caius Caesar
Roman Sculpture: Head of Roman girl
Donatello (school of): Bust of John the Baptist
Harry Parr: Bridget, portrait head (English pottery *colored*)

Charles Despiau: Head of child
Flemish Pottery: Rubens' son

Phillip Szenes: Lost in thought
Marie Laurencin: Young lady in pink
Alfred Palmer: Portrait of girl
John S. Sargent: Portrait
X Georg Buchner: Erica

Carl Fred. Friesecke: Homework
Oscar Glatz: Benno
Jules Derain: Girl in orange jacket
Jules Pascin: Child with black cat
Maurice Sterne: Young girl

Ludw. v. Zumbusch: The little peasant
Reynolds: Infancy (Master Hare)
X J. B. Greuze: Innocence
Franz v. Stuck: Congratulations
Hugo v. d. Goes: Donor's daughter (Portinari altar-piece)

X Joshua Reynolds: Age of Innocence
P. P. Rubens: Artist's second son
Cron. de Vos: Portrait of child
Van Dyck: Baby Stuart

Angelo Bronzino: Don Garcia
Ed. Manet: Boy with sword
F. E. Laszlo: Breakfast
V. Van Gogh: Head of boy
X John S. Sargent: Robert de Civrieux

Frank Duveneck: Whistling boy

Taddeo Zucchero: Portrait of James VI
Dutch School: Portrait of boy
Velasquez: Prince Balthasar Carlos
X Joshua Reynolds: Viscount Althorp—age 4

Sir Henry Raeburn: Master Scott Elliott

X Nguyen Phan Chanh: Young girl washing vegetable

Nguyen Phan Chanh: Child with bird cage

X Fra Bartholommeo: Head of child
Hans Holbein: Portrait of child
Hans Holbein: Prince of Wales
English: School study of 2 boys' heads

GROUP V. FAMILY (42 pictures)

Ed. Manet: Breakfast
Van Dyck: Sebastian Leerse with wife and child
Jacob Jordaens: Artist and family
Rembrandt: Artist and family
Franc. José Goya: Family of Charles IV of Spain

Jean Monet: Breakfast

Jan van Eyck: Jan Arnolfini and wife
P. A. Renoir: Le menage Sisley

Group II of young men, Group III of old people, Group IV of children and Group V of family pictures. The attempt was made in each subdivision to include pictures which were similar in style of painting, costume or medium (painting, drawing, sculpture) yet differed from each other because of the facial expression, conception, technique, etc.

The choices of the 6–10 year olds in the preliminaries differed from those of the 11–15 year olds. Therefore two portrait exhibits were set up. There was also a difference in choice between the boys and girls of the younger group; wherever such a difference showed, both choices were included. There were 43 groups of preliminary pictures from each of which one picture was chosen; 8 pictures were added to this list to com-

Paris Bordone: Venetian lovers
P. P. Rubens: Artist and first wife
Lorenzo Lotto: Betrothal
Rembrandt: Jewish bride
X Ary Scheffer: St. Augustin and mother
Persian painting: Radha and Krishna
Jan Massys: Banker and his wife

P. A. Renoir: Children at Guernsey
Paul Gauguin: Three Tahitians
X Eugene Carriere: Schoolwork
Cornelis de Vos: Artist's daughters

Van Dyck: Children of Charles I
Joshua Reynolds: Young fortune teller
Francesco José Goya: Child group

Ellen E. Rand: Penelope
Henry Caro-Delvaille: Grandmother and grandchild
L. A. Swinerton: Little mother
X F. Luis Mora: Mother from the turquoise land
Pablo Picasso: Madonna and child
Anselm Feurbach: Mandolin player
Gio. Segantini: Maternity

Joshua Reynolds: Lady Smith and children
Utamaro: Young mother nursing child
Frans Hals: Nurse and child

Hans Holbein: Artist's family
Dom. Ghirlandajo: Grandfather and grandson

Egyptian Painting: from tomb

Roman wall painting: Portrait of Paquius Provulus and wife
X Roman wall painting: Venus punishing Cupid
Roman sculpture: Lucius Vibius, wife and son
Roman sculpture: Mother and sons
X Tullio Lombardo: Man and woman

X J. A. D. Ingres: Mme. Baltard and son

J. A. D. Ingres: Guillon Lethier's family

pensate for the differences between preferences of girls and boys. Thus in portrait list I, Nos. 6, 15, 18, 23, 38 and 48 are choices of boys; Nos. 4, 25, 36, 42, 45 and 50 are those of girls. Differences in the preliminary choices between the Averages and the Specials were few (9) and were decided in favor of the majority.

The two final portrait exhibits were: one of 51 pictures for the younger group (6–10 years old) and one of 43 pictures for the older group (both Averages and Specials, 11–15 years old).

PORTRAIT LIST I (younger group)

1.	Georg Kolbe: Profile	sculpture	uncolored
2.	Donatello: Cecilia (profile)	relief	uncolored
3.	Japanese, Rifu: A Lady	painting	colored
4.	G. L. Brockhurst: Ramunchita	painting	colored
5.	J. A. D. Ingres: Mme. Rivière	painting	colored
6.	J. B. Greuze: Milkmaid	painting	colored
7.	F. Clouet: Elizabeth of Austria	painting	colored
8.	Chr. Amberger: Afra	painting	colored
9.	Venetian School: Head with braid	drawing	uncolored
10.	K. W. Leighton: Sun-dance bustle	painting	colored
11.	Mino da Fiesole: Youth	sculpture	uncolored
12.	Aristide Maillol: Renoir	sculpture	uncolored
13.	Chinese: An arhat, 18th c.	painting	colored
14.	Georg Buchner: Erica	painting	colored
15.	L. V. Zumbusch: The little peasant	painting	colored
16.	John Singer Sargent: Robert de Civrieux	painting	colored
17.	Nguyen Phan Chanh: Young girl	painting	colored
18.	Fra Bartolommeo: Head of a child	drawing	uncolored
19.	Jan Massys: Banker and wife	painting	colored
20.	Cornelis de Vos: Artist's daughters	painting	colored
21.	J. A. D. Ingres: Mme. Baltard and child	drawing	uncolored
22.	Egyptian: Queen Nefertiti	terra cotta	colored
23.	Gustave Courbet: Irlandaise	painting	colored
24.	P. A. Renoir: Marguerite	painting	colored
25.	F. H. Drouais: Mlle de Charolais	painting	colored
26.	Paris Bordone: Lady	painting	colored
27.	Jan Vermeer: Lace maker	painting	colored
28.	Gilbert Stuart: J. S. Copley	painting	colored
29.	J. A. D. Ingres: Portrait of Mr. Houdebourt	drawing	uncolored
30.	Piero do Cosimo: Florentine General	painting	colored
31.	Classical sculpture: Herm of Alexander	sculpture	uncolored
32.	Const. Meunier: Miner with ax	sculpture	uncolored
33.	Hans Maler zu Schwaz: Wolfgang Tanvelder	painting	colored
34.	Italian: Benvenuto Cellini	sculpture	uncolored
35.	Peter Oliver: Man with beard	drawing	uncolored

36.	Vincent van Gogh: L'Arlésienne	painting	colored
37.	Wlad. L. Borovikovsky: Persian prince	painting	colored
38.	Sir Wm. Orpen: Ferdinand Foch	painting	colored
39.	Thom. de Keyser: Portrait of a woman	painting	colored
40.	Cornelis de Vos: Abraham Grapheus	painting	colored
41.	Flemish pottery: Rubens' son	pottery	uncolored
42.	Sir Joshua Reynolds: Infancy	painting	colored
43.	A. van Dyck: Baby Stuart	painting	colored
44.	Sir J. Reynolds: Viscount Althorp	painting	colored
45.	English school: Study of 2 boys' heads	drawing	uncolored
46.	Francesco Goya: Family of Charles IV	painting	colored
47.	P. A. Renoir: Le menage Sisley	painting	colored
48.	Dom. Ghirlandajo: Grandfather and son	painting	colored
49.	Giov. Segantini: Maternity	painting	colored
50.	Frans Hals: Nurse and child	painting	colored
51.	Egyptian painting from tomb	drawing	uncolored

PORTRAIT LIST II (older group)

1.	Georg Kolbe: Profile	sculpture	uncolored
2.	Donatello: Cecilia (profile)	relief	uncolored
3.	Japanese, Rifu: A lady	painting	colored
4.	G. L. Brockhurst: Ramunchita	painting	colored
5.	J. A. D. Ingres: Mme. Rivière	painting	colored
6.	J. B. Greuze: Milkmaid	painting	colored
7.	F. Clouet: Elisabeth of Austria	painting	colored
8.	Chr. Amberger: Afra	painting	colored
9.	Venetian School: Head with braid	drawing	uncolored
10.	K. W. Leighton: Sun-dance bustle	painting	colored
11.	Mino da Fiesole: Youth	sculpture	uncolored
12.	Aristide Maillol: Renoir	sculpture	uncolored
13.	Chinese: An arhat, 18th c.	painting	colored
14.	Georg Buchner: Erica	painting	colored
15.	L. v. Zumbusch: The little peasant	painting	colored
16.	John Singer Sargent: Robert de Civrieux	painting	colored
17.	Nguyen Phan Chanh: Young girl	painting	colored
18.	Fra Bartolommeo: Head of a child	drawing	uncolored
19.	Jan Massys: Banker and wife	painting	colored
20.	Cornelis de Vos: Artist's daughters	painting	colored
21.	J. A. D. Ingres: Mme. Baltard and child	drawing	uncolored
22.	Hans Thoma: Flora	painting	colored
23.	Raphael: Donna Velata	painting	colored
24.	Jan Vermeer: Head of a girl	painting	colored
25.	Frans Hals: The merry fiddler	painting	colored
26.	A. Graff: Self-portrait	drawing	uncolored
27.	Gianbaptiste Moroni: The tailor	painting	colored
28.	Hans Holbein: Bonifacius Auerbach	painting	colored

29.	Antonio Canova: Damoxemus, pugilist	sculpture	uncolored
30.	Georg Kolbe: Young man	sculpture	uncolored
31.	Greek sculpture: Head of old man	sculpture	uncolored
32.	Lionardo: Self portrait	drawing	uncolored
33.	Van Gogh: Le paysan	painting	colored
34.	Lopez y Portana Vincente: Goya	painting	colored
35.	Rembrandt: Artist's mother	painting	colored
36.	Albert Marque: Premier pas	sculpture	uncolored
37.	J. Reynolds: Age of innocence	painting	colored
38.	Velasquez: Prince Balthasar Carlos	painting	colored
39.	Jacob Jordaens: Artist and family	painting	colored
40.	L. A. Swinnerton: Little mother	painting	colored
41.	J. Reynolds: Lady Smith and children	painting	colored
42.	Roman wall painting: Venus and Cupid	sculpture	uncolored
43.	Roman sculpture: Mother and sons	sculpture	uncolored

The 51 picture exhibit for the younger group contained 25 percent uncolored pictures (of which 10 percent were drawings and 15 percent photographs of sculptures). The 43 picture exhibit for the older group contained 32 percent uncolored pictures (of which 11 percent were drawings and 21 percent photographs of sculptures).

The pictures were placed in such a way that all were equally visible and could be seen at some distance as well as at a close range. Each group of children was directed to look at the pictures carefully and leisurely, to choose the picture they liked best, next best, third best, etc., and to answer the questions in the following questionnaire:

1. Why do you like No.....best?
   Explain as well as you can.
2. Have you seen this portrait before?
3. Do you like this portrait best
   a. because of the expression of the face?
      why?
   b. because it reminds you of someone you know?
      whom?
   c. because this person is young?
   d. because of the colors?
   e. because of the costume, suit, dress?
   f. because of the hat, hairdress, beard?
4. Do you like statues better than paintings?
5. Would you like to hang this portrait in your house?
6. If you were an artist, would you like to paint a portrait like this?
   Would you like to paint any portrait?
7. Is there anything in this portrait which you would like to have
   different?

Children under 12 gave their answers orally and the examiner filled out the questionnaire under their dictation. Children over 12 wrote their own answers without help. So as to avoid any influence by a famous name, the names of the artists were not disclosed. The testing was done in small groups.

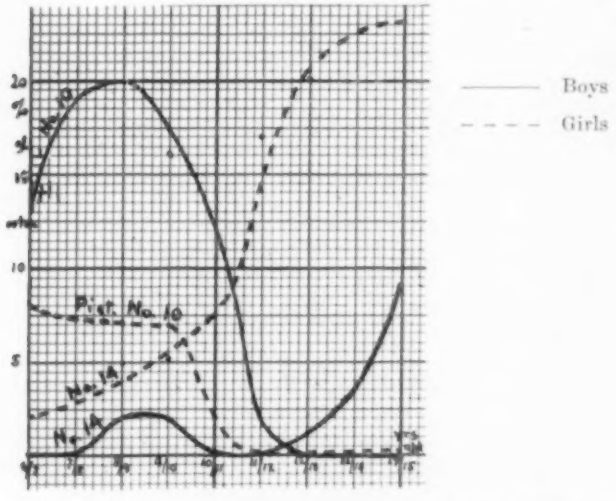
RESULTS

A. Choice of pictures

Pictures 1 to 21 are the same in both exhibits. Thus nearly half of the pictures chosen from the preliminary exhibit were preferred by all age levels. Comparison of pictures No. 10 (K. W. Leighton: Sun-dance bustle) and No. 14 (Georg Buehner: Erica) shows the fading interest in No. 10 and the mounting interest in No. 14 with increasing age.

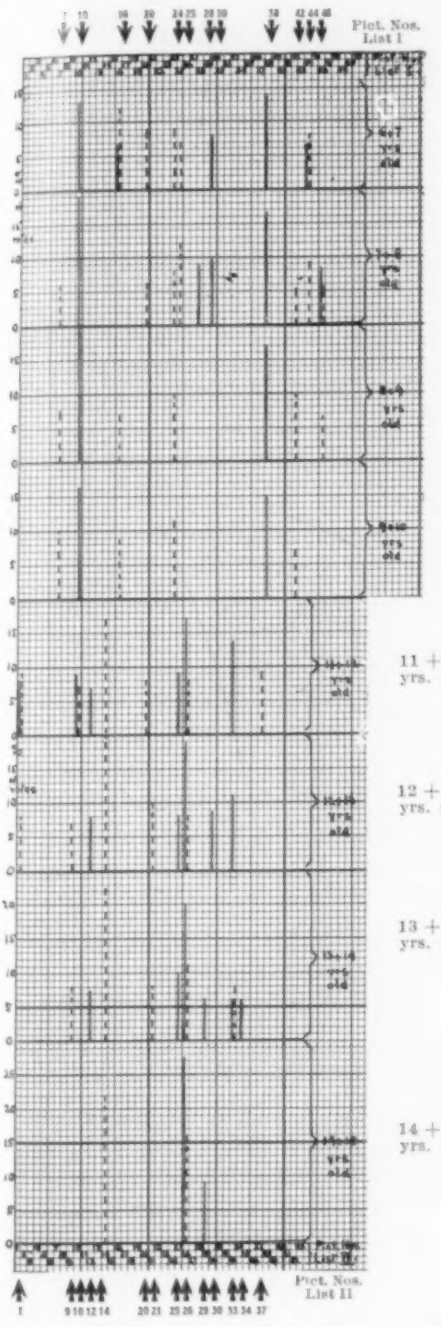
GRAPH I

COMPARISON OF PICTURES 10 AND 14 THROUGH ALL AGE LEVELS



At some age levels preference is concentrated on very few pictures (e. g.: two at the 14–15 year age level); at others it is more scattered. A few pictures did not attain a single first or second choice vote; still more did not receive a first choice vote. In general 2 to 7 preferred pictures have a concentration of 50 percent or more of the votes while the other 50 percent of the votes are scattered.

The following graphs show the pictures which were chosen by boys and girls at different age levels.



GRAPH II

PICTURE CHOICES OF THE YOUNGER GROUP IN RELATION TO LIST I

Boys

Girls

Nos. 1 to 21 are the same pictures in both groups.

GRAPH III

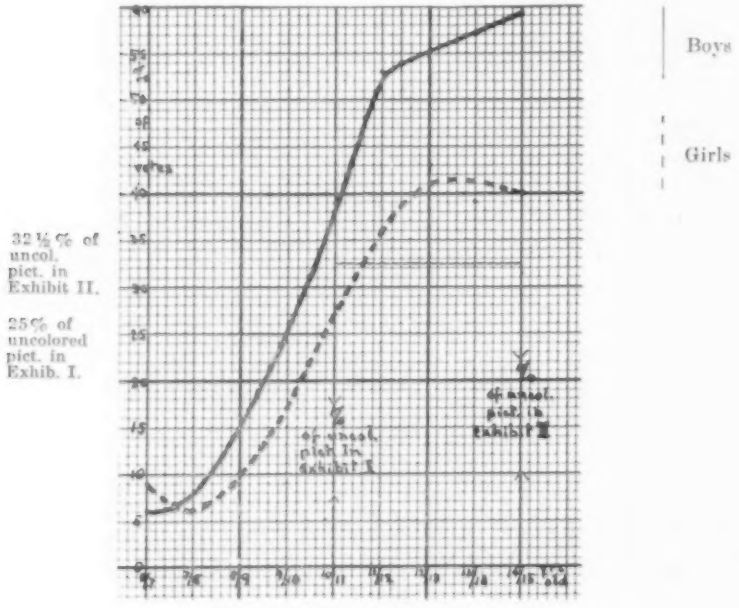
PICTURE CHOICES OF THE OLDER GROUP IN RELATION TO LIST II

TABLE I

	Age level	% of votes on number of pictures		pictures without 1st or 2nd choice votes
Boys	6– 7	47	5	23
Girls	6– 7	43	5	25
Boys	7– 8	62	5	25
Girls	7– 8	53	7	25
Boys	8– 9	37	2	25
Girls	8– 9	40½	5	28
Boys	9–10	31	2	21
Girls	9–10	36	4	28
Boys	11–12	64	6	15
Girls	11–12	51	5	16
Boys	12–13	55½	5	23
Girls	12–13	52	5	15
Boys	13–14	55½	6	23
Girls	13–14	57	5	21
Boys	14–15	45	3	21
Girls	14–15	38	2	18

The choice of colored pictures compared with the choice of uncolored pictures gave the following results.

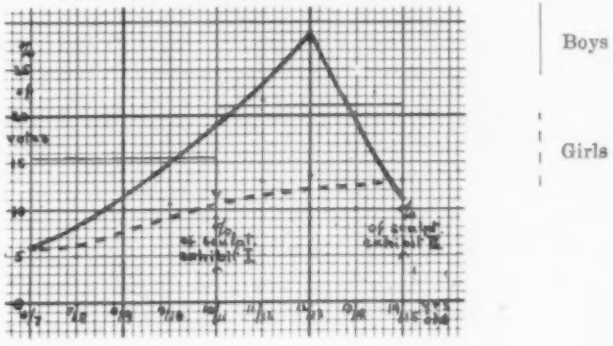
GRAPH IV



Thus, at the age of 9–10 uncolored pictures begin to be preferred to colored ones and this preference, increasing with age, by far exceeds the number (proportionally) of uncolored pictures in the exhibits.

GRAPH V

15½ PERCENT OF THE PICTURES IN LIST I WERE PHOTOGRAPHS OF SCULPTURES; 21 PERCENT IN LIST II
PREFERENCE CURVE FOR SCULPTURES



The votes of the younger group show that they chose only pictures of younger people. No. 38, Wm. Orpen's portrait of General Foch, is the one exception. The older group does not show such absolute preference for portraits of younger persons. The small number of votes for portraits of older people are almost entirely votes of boys.

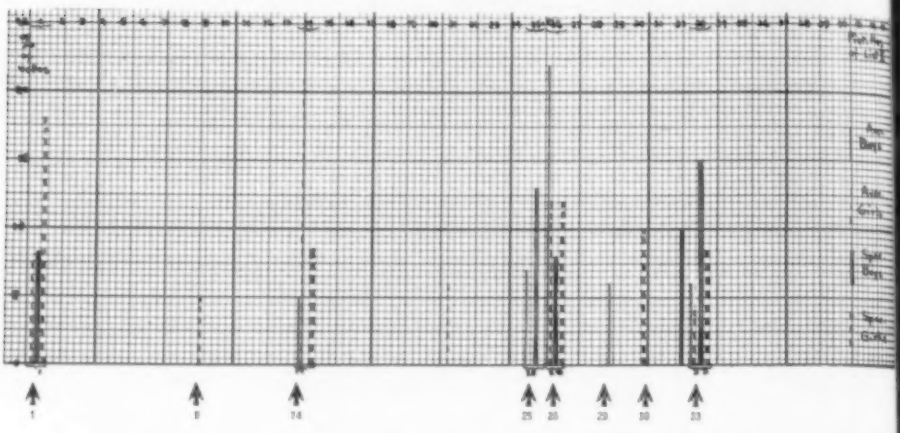
In comparing the average group of children (12–15 years old) with the group of specially gifted children of the same age, we find that there are few differences in preference in the preliminary exhibit, yet there is quite a marked difference in the choices of the final exhibit (List II).

It is noteworthy that only half of the preferred pictures are chosen by both Averages and Specials and that the order of preferences is reversed. No. 1, for instance, has 18 percent of the votes of the Special girls but only 3 percent of the votes of the Average girls. No. 14 has 22 percent of the votes of the Average girls but only 8½ percent of the Special girls. No. 26 has 24 percent of the Average boys' votes and 8 percent of the Special boys' votes; and No. 33 has 15 percent of the Special boys' but only 5½ percent of the Average boys' votes.

As to choice of colored and uncolored pictures, Graph VII shows the overwhelming preference for uncolored pictures of both Specials and

GRAPH VI

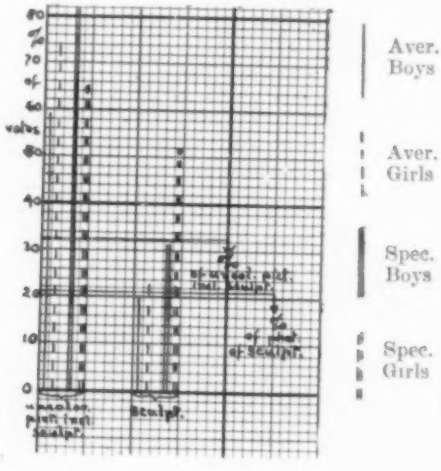
PREFERENCE OF PICTURES—COMPARISON BETWEEN AVERAGES AND SPECIALS



Averages. It is curious to note how many Special girls (52 percent) vote for sculpture—twice as many votes as in any other group.

GRAPH VII

PERCENTAGE OF PREFERRED UNCOLORED PICTURES (INCLUDING SCULPTURE) PERCENTAGE OF PREFERRED PICTURES OF SCULPTURES; COMPARISON BETWEEN AVERAGE AND SPECIAL GROUPS

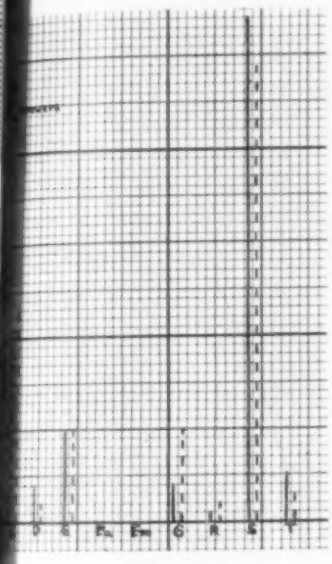


Computations were made by taking into account the first and second choices, because first and second choices are apparently very close to each other and might be considered as interchangeable.

Graphs VIII, IX, X and XI give a survey of the classified answers to question 1 through age-levels

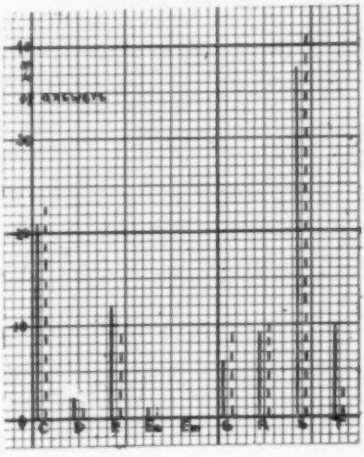
GRAPH VIII

AGE-LEVEL 6–8



GRAPH IX

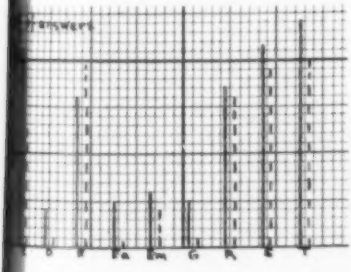
AGE-LEVEL 8–10



C color
D design
E expression
Ea easy to copy or draw
Em emotional resp.
G general
R reality
S subject
T technique

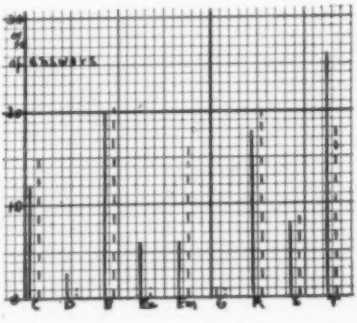
GRAPH X

AGE-LEVEL 11–13



GRAPH XI

AGE-LEVEL 13–15



C color
D design
E expression
Ea easy to copy or draw
Em emotional resp.
G general
R reality
S subject
T technique

B. Answers to questionnaire

The answers to the questionnaire are evaluated according to their content when they are not "yes–no" answers. All answers refer to the first picture choice.

Question 1: Why do you like No.....best? yields individual answers which are classified roughly under the following headings:

Color — "the colors attract most," "are most beautiful"

Design — (analysis of the picture) "nicely arranged," "hands are folded so they make a white spot"

Expression (character) — "the face looks sad and thoughtful," "her eyes are wistful"

Easy to copy (or draw) — "this is easy to draw (No. 26)"

Emotional response — "he looks as if he is crying, I'd like to comfort him," "He is a person I would like to know"

General — "pretty," "cute," "nice"

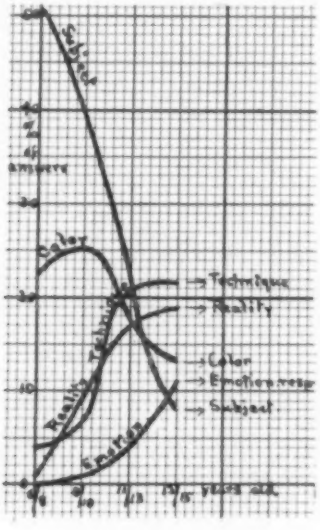
Reality — "it is real," "life-like"

Subject (content of the picture) — "I like dogs in a picture (No. 16)," "I like dresses like these," "I like the hair made up like these little girls have (No. 20)"

Technique — "eyes are well drawn," "colors are painted smooth"

GRAPH XII

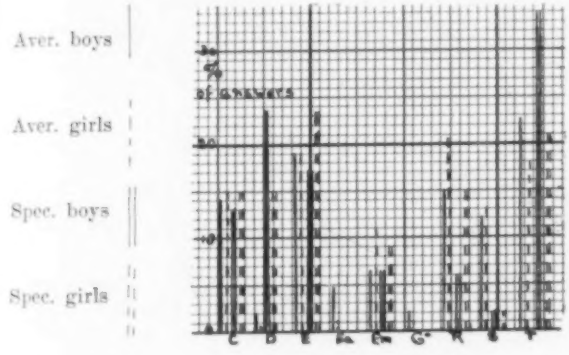
SHOWS THE INCREASE AND DECREASE OF INTEREST IN SUBJECT, COLOR, REALITY, TECHNIQUE AND EMOTION THROUGH AGE LEVELS FOR BOTH BOYS AND GIRLS, (AS COMPUTED FROM ANSWERS TO QUESTION 1)



In the comparison of the answers of Averages and Specials to question 1, the difference between the two groups is quite marked. The Specials are much more interested in design (analysis of picture) and techniques than the Averages, and much less interested in subject matter. In emotional response to the pictures and in the importance of reality both groups show a difference between boys and girls. The girls comment on reality more than the boys and are emotionally more responsive.

GRAPH XIII

ANSWERS TO QUESTION 1; COMPARISON OF AVERAGES AND SPECIALS



C color
D design
E expression
Ea easy to copy or draw
Em emotional resp.
G general
R reality
S subject
T technique

Question 2: Have you seen this portrait before?

Answers to this "yes–no" question show that 11 percent of the younger group think they have seen the picture before or one "just like it" and that 9½ percent of the older group believe they have seen it. Compared to the Averages (10 percent) nearly three times as many Specials seem to know the picture (27 percent).

Question 3a: Do you like this portrait best because of the expression on the face? Why?

This question was answered with slight increase of "yes" with increase in age. The older the child gets, the more reasons he is able to give for preferring the picture because of the facial expression (57 percent . . . 73 percent . . . 74 percent . . . 82 percent of reasons for the answers given), and the kind of reasons changes. The younger child likes kind, pleasant, smiling expressions (boys 6–10: 33 percent, girls 6–10: 72 percent; boys 11–15: 27 percent; girls 11–15: 16 percent). The older child tends toward descriptions such as: sad, wistful, serious, inter-

esting.[6] The percentage and kind of answers given by Averages to question 3a are nearly the same as those given by Specials.

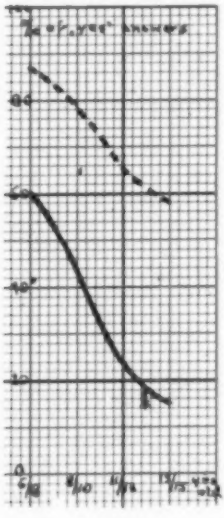
Question 3b: Do you like this portrait best because it reminds you of someone you know? Whom?

Answers to this question show that at all ages about the same number both of girls and of boys notice resemblances to people they know (24 percent). The younger group, including the 11 and 12 year olds is not sure with whom to connect the resemblance they notice and include story-heroes and historical figures.[7] The older group, 13 to 15 year olds, identifies the resemblance with greater assurance. The Specials do not see as many resemblances as do the Averages, but identify everyone they do

GRAPH XIV

"YES-ANSWERS" TO QUESTION 3c

———— boys ■ Special Boys
– – – – – girls * Special Girls



[6] "it is a sad and faraway look," "it has a wistful expression because she seems to be in such deep thought," "almost pathetic"

[7] e.g.: George Washington and Jefferson for No. 26 of List II (A. Graff: Self-portrait) "Last of the Mohicans" for No. 10, "old man on my street," "my grandfather," "the guard" (at the Museum) for No. 38; George Washington for No. 46 in List I; "my dog" for No. 16.

comment on (resemblances noted by Specials: 9 percent, by Averages: 22 percent.)

Question 3c: Do you like this portrait best because this person is young?

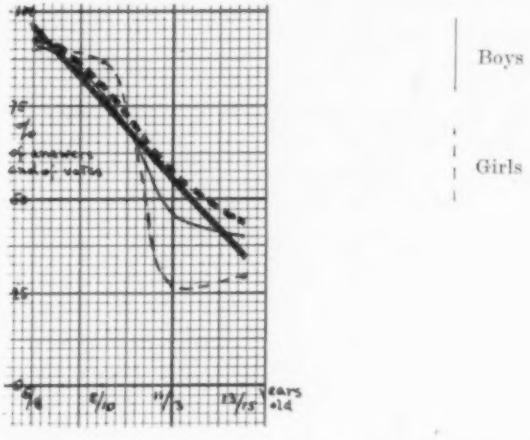
The answers to this question show the preference of the younger group for young people. This preference is less pronounced with the older group, especially with the boys. Special and Average boys do not differ from each other (17 percent . . . 15 percent) but Special and Average girls differ strongly (14 percent . . . 47 percent).

Question 3d: Do you like this picture best because of the colors?

This question, of course, was answered only by children who had chosen colored pictures. The "yes" answers diminish with advancing age levels and this decrease runs almost parallel to the decrease in choice of colored pictures. The Specials give far fewer "yes" answers on this question than the Averages (Specials 29 percent, Averages 45 percent).

GRAPH XV

CURVE SHOWING THE DECREASE OF YES-ANSWERS TO THE QUESTION 3D (THICK LINES) AND THE DECREASE IN PREFERENCE OF COLORED PICTURES (THIN LINES)



Question 3e: Do you like this portrait best because of the costume, suit, dress?

This question is related to the "subject" classification of question 1. The affirmative answers indicate an interest in details of the appearance of the presented person. Here, too, a steady decrease of interest takes place with advancing age, and the interest of the Specials is negligible

as compared to the interest of the Averages (Specials 7 percent, Averages 31 percent).

Question 3f: Do you like this portrait best because of the hat, hairdress, beard?

Question 3f, like 3e, is concerned with interest in personal appearance, particularly with the facial make-up. The younger children are more impressed with these details of appearance than the older ones, and the Averages very much more than the Specials.

TABLE II

ANSWERS "YES" TO QUESTIONS 3E AND 3F IN PERCENTAGE

		6–8	8–10	11–13	13–15	Specials
Question 3e:	Boys	97	69	48	38	9
	Girls	84	78	45	23	5
Question 3f:	Boys	88	70	48	38	26
	Girls	83	78	45	23	14

Question 4: Do you like statues better than paintings?

Answers to this question were interesting, as they not only show a prevailing liking for pictures versus statues, (with few children having no preference), but they also show a vast difference between the Specials and the Averages.

TABLE III

ANSWERS TO QUESTION 4: SPECIALS AND AVERAGES IN PERCENTAGE

	Specials		Averages	
	yes	no difference	yes	no difference
Boys	8½	43½	22	12
Girls	9½	52	16	9½

Question 5: Would you like to hang this portrait in your house?

This refers to the desire of the child to possess what he likes and the response is very much like the one in a previous experiment.[8] About 92 percent of all children at all age-levels wish to own the picture they like best. The response of the Specials is slightly less possessive than that of the Averages (80 percent versus 94 percent).

Question 6: If you were an artist would you like to paint a portrait like this?

Question 6a: Would you like to paint any portrait?

Yes–answers to these questions decrease slightly with the higher age levels (90 percent . . . 84 percent), 6a being answered less emphatically by the boys. The answers of the Specials are of the same kind.

[8] See: "On Art Appreciation of Children I," XXXI, *Journal of Educational Research* (October, 1937), pp. 118-137.

Question 7: Is there anything in this portrait which you would like to be different?

The answers to Question 7 were analysed in a similar way as those to Question 1. The following table gives the results.

TABLE IV

ANSWERS TO QUESTION 7 IN PERCENTAGE

Age		6–8	8–10	11–13	13–15
Number of answers:	Boys	28	40	32	30
	Girls	21	37	30	35
Number of changes:	Boys	31	55	46	32
	Girls	22	40	30	36
Change in subject:	Boys	81	68	46	50
	Girls	57	61	43	45
Change or add color and clearness:	Boys	8	24	14	30
	Girls	41	32	35	27

(These percentages are calculated from the number of changes, not from the number of children.)

Fewer Specials than Averages wanted to change things in the picture.

INTERPRETATION OF RESULTS AND CONCLUSIONS

In considering the picture preferences, one notices that boys at nearly all age-levels select almost exclusively men's and boys' pictures, while girls, especially in the younger group, prefer women's and children's pictures. Only No. 26, the Graff, is a preferred man's portrait with the older girls. This trend of choices seems to indicate that the interest in, and appreciation of, the picture is determined by the subject presented, as we found in our previous investigation. Since in this experiment, all of the pictures are portraits, a preference for a picture actually means preference for the person portrayed. The younger boy's imagination is caught by stories of Indians, (10), of war heroes (30, 38), adventurous looking figures wearing the costume of the time of the Revolution (28) whereas the older group of boys are more attracted by men with strong or pensive features (12, 26, 30, 33), features of the adventure type (25), or the athletic type (29). The choices seem to reflect the ideals of boys in a way somehow similar to their reading matter.[9] The accent is on the masculine type which they admire. On the other hand, the girls, especially the younger ones, follow their feminine ideals by choosing women's and

[9] To what extent environmental influences affect these subject preferences is a question, but it seems probable that parallels for the preferred picture subjects could be found in preferred reading, movies and music.

children's portraits. No. 24, chosen by the younger group, and No. 14 chosen by the older group illustrate such ideal types. No. 10 is the one portrait of a man chosen by the 10–11 year old girls—that is at the age of interest in adventure. No. 26 was apparently chosen for the technique but it also may impersonate a softer masculine type, perhaps because of the attire.

It is, then, again[10] the subject preference which, to a large extent determines the choices. The subject being portraits only, choices indicate the kind of people children are interested in, the setting which these people suggest.

One might go so far as to say that the children's choices are in agreement with situations and happenings which are closest to their favorite imaginings, so that the persons represented in the portraits chosen, might figure as heroes of such imagined stories or daydreams; that they seem to be chosen according to certain attributes such as facial expression or costume by means of which the portrait symbolized the child's ideals or wishes. That the subject is of such importance is further illustrated by some single answers in the questionnaire, (i. e.: the answer regarding No. 16 or 20 which indicate that the dog, or the landscape made these particular pictures preferred ones).

How far do the answers in the questionnaire support the interpretation that subject interest seems to be the deciding interest?

In examining the graph which classifies the answers to question 1 of the younger group, the subject interest looms highest; all other interests —even the one in color—are incidental compared to it. The answers of the older group show a decline in subject interest. Reality, technique and expression are the chief reasons given for their preferences. The importance of facial expression, the realism in depicting this facial expression, and the technique which brings out such a realistic facial expression, leads to the assumption that either a conscious or unconscious identification of the child with the portrait takes place, or that the child wishes to have a friend like the portrayed person.

The choice of No. 46, Goya, by two age levels may seem to disprove the assumption that subject interest is the deciding reason for choice. But the reasons given in the questionnaire[11] show that the attributes of this

[10] See: "Art Appreciation of Children I," XXXI, *Journal of Educational Research* (October, 1937), Conclusions.

[11] Such as: "bright colors and jewelry," "dressed nice," "I like those uniforms," "I know who he is" (George Washington—looking at Charles IV), "like the costumes . . . old fashioned," "interesting how people dressed" and either a "no" as answer to question 3a or "Yes, *on the children.*"

family—clothes, jewelry, etc.—not the faces of the people portrayed invited the choice.

Thus subject interest seems to be the decisive factor influencing the choice. Therefore, younger children's identification with their hero is mostly connected with imagined action, that is, things they think their hero is liable to do and which they themselves would like to do. Thus the attributes of a person shown in the picture indicating or symbolizing the role the portrayed person might play in certain imagined dramatic situations, is of primary importance, the facial expression of secondary importance. On the other hand, older children identify themselves more with individual traits shown in the facial expression, the person's sentiments, emotions, etc. than with the action the portrait may stand for.

The conclusion that subject interest determines the choice is further supported by the fact that young people's portraits are chosen almost entirely by both groups, and by the answers to Question 3c which is answered by the younger group overwhelmingly with "yes."

The importance of color, so often assumed to determine children's preferences and to be foremost in attracting attention, especially of girls, is shown to be of secondary significance. This is brought out by the choice of pictures as well as by the answers to the questionnaire (answers to Question 1 as well as to Question 3d) which indicate that color is not as important to children as is generally assumed although it may influence the decision to some extent. Undoubtedly, as shown by graphs 8, 9, 10, 11 and 15, color is of greater importance to younger children than to older ones, yet one must also consider that the colored pictures were those which showed most ornaments on dresses, jewels and the like (Nos. 7, 10, 24, 25, 38, 20).

The technique enters strongly into the choice of the older group, which accounts to some extent for their preference for uncolored pictures. The older child can understand, appreciate and admire achievement with a medium which he has been handling himself and which seems familiar while oil paintings are technically remote. The much admired drawing by Graff (No. 26), in charcoal with highlights, combines a technique many children have either tried, or seen and wanted to try, with reality in execution. And the expression and attributes (costume) are those of a person who readily can be imagined as a hero of the time of the revolution. The girls of the older group, who think more of the facial expression than of the technique (compared to boys) and just as much of the reality, find their ideal personified in No. 14 (the auburn hair and the

smooth treatment of the complexion were very influential) Nos. 1, 9 and 21.

In comparing the choices of Averages and Specials we find that the choices of the Specials are not very different from those of the Averages as they also prefer the pictures 1, 14, 25, 26, and 33 but the order of preference is reversed. Whereas the preference of the average boy is quite different from that of the average girl, special boys and girls frequently prefer the same pictures. It is obvious that the Specials are less concerned than the Averages with the subject presented, the youth of the person, the conception of an "ideal" young man or woman. They have less tendency to identify themselves with the person portrayed. Considering the answers in their questionnaires, (see graph XIII), it is also obvious that the subject and the reality of the picture seem less important to the Specials than the technique and design. It seems logical that children with greater creative ability should notice technical qualities which they admire more than average children and, again, that they will appreciate and hope to emulate the kinds of techniques which they are able to understand or which they actually use themselves (Nos. 26 and 32).

Although answers of the Specials to the question on facial expression are as many as and similar to, those of the Averages, yet the actual choice of a number of older people's portraits shows that their interest is of a far less personal nature. In addition, the answers applying to design show that their appreciation of arrangement, values of colorings and light, outweighs any personal interests. Therefore although there does not seem to be a great difference between Averages and Specials as to interest in certain personality types, the weight of other qualities in the picture (which in a restricted sense may be called aesthetic qualities), is strong enough to determine the choice. The fact that many of the Specials had seen some of the pictures before, due to their greater interest and curiosity for works of art (either at exhibits or in reproductions), may have influenced their choice of, for instance No. 33, the Van Gogh.

The difference between Averages and Specials in choice of colored and uncolored pictures is slight, but it is more marked between average and special boys due to the Specials' preference for No. 32, the Leonardo. The unusual interest of the special girls for sculpture (No. 1 and 30) may be explained by the subjects of these pictures as well as by aesthetic qualities.

SUMMARY

In order to see what qualities in a portrait determine children's preferences, two portrait exhibits were set up, one consisting of 51 pictures for a younger group (age 6–10), and one consisting of 43 pictures for an older group of children (age 11–15). The experiment was made with 523 children, 44 of whom were artistically specially gifted ("Specials," aged 12–15) Both picture set ups were the result of a preliminary selection by a smaller group of children from 261 portraits. They contained portraits painted in different periods, different in style, costume, expression and technique. Exhibit I, for the younger group, contained 25 percent uncolored pictures (drawings and photographs or sculptures); exhibit II, for the older group, contained 32 percent uncolored pictures. The testing was done in small groups. The children were instructed to choose the pictures they liked best and to answer a questionnaire about the reasons for their choices.

The results of this experiment showed a preference centering around two to six pictures, having 50 percent or more votes. It showed that boys in general select almost exclusively men's pictures, while girls prefer women and children's pictures, the only exception being a charcoal drawing by Graff (No. 26), a man's portrait which was a favorite of both boys and girls alike. The choice of portraits, as well as the answers given in the questionnaires show definitely that a portrait is selected for its content, because the person portrayed interests the children. Whereas the younger boys are attracted by one portrait representing an Indian (No. 10), and others representing soldiers (Nos. 30, 38, 28), the older boys are attracted by men with strong features (Nos. 12, 26, 30, 33), the adventurous or the athletic types (Nos. 25, 29), that is the masculine type which they admire. The girls of all age levels follow their feminine ideals (for example: Younger group—No. 24, Older Group— No. 14).

The choice of the younger children seems to indicate identification with their hero or with the things their hero is liable to do, that is, imaginary action. Consequently the attributes of the person shown in the picture are of primary importance, the facial expression secondary. Older children, on the contrary, apparently identify themselves with individual "character" traits, sentiments, emotions, etc., shown in the facial expression of the portrait. That is, the younger children wish to be included in the doings of their hero, have the same surroundings, be part of it. The older ones wish to *look* like their hero.

Color is of secondary significance. This fact is supported by the actual choice of pictures as well as by the answers to the questionnaires. It is, however, of greater importance to younger than to older children. This, too, supports the interpretation that content of the portrait dictates the choice.

The choice of the older group is also influenced by the technique of the portrait. The most preferred picture of that group (especially by boys, Graff—No. 26) is a drawing in charcoal with highlights; this is a technique that many children have tried and are able to understand and appreciate.

Comparison of the choices of the Specials with those of the Averages brings forth preferences not very different from those of the Averages, but with the order of preferences reversed. It is further to be noticed that while the average boy and average girl differ markedly in their taste, the taste of the special boys and girls is nearly the same. The average child chooses a young person's portrait. This is much less true of the Specials, who apparently have considerably less interest in the subject—less tendency to identify themselves with the portrayed person, than the Averages. The answers in the questionnaire also indicate that subject and reality of the picture are less important to the special children than technique and design. Their answers show observation and appreciation of the design which is imperceptible with the Averages.

We therefore can say that there does not seem to be a great difference between Averages and Specials as to interests in certain personality types, which means that their general mental development proceeds along the same lines. The Special's choice, though, differs inasmuch as the average child is guided mostly by subject interest, while the special child's choice is determined by qualities of an aesthetic nature. His interest in facial expression is less personal, his interest in technique is stronger. He alone is aware of design. These noticeable differences between the two groups of 12–15 year old children may be considered as indicators of special artistic qualities in a child.[12]

[12] I wish to thank Mrs. Esther Marshall Sills for her help in preparing and reading the manuscript.

THE EFFECT OF RECENT RESEARCH UPON THE SELECTION AND PLACEMENT OF ITEMS OF GRAMMAR IN THE SECONDARY SCHOOL CURRICULUM

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EVER since 1750 when the uninflected language of English was seeking entrance to the Academy on a par with the inflected language of Latin, the question of the selection and placement of the specifics of grammar has been polemical. Dr. Lyman's study of the place of composition in the American schools before 1850 shows the following periods in the study of grammar: (1) Grammar as an art, divided into the Latin, the rote, and the parsing periods, from 1750 to 1847; (2) Grammar as a science, divided into the analysis, the rhetorical, and the incidental study periods, from 1848 to 1920. The period since 1920 we might call the socialized language period, during which the emphasis has been changed from the study of grammar as a means to learning the mother tongue to the study of the language through the sentence, with grammar used for improved correctness.

Let me show the bases that have been used for determining, first, the items of specifics of grammar for teaching; and second, their placement in the curriculum. In some cases the two will overlap, as the same ideas determined both selection and placement. In connection with this two-fold analysis I shall cite a few of the most important pieces of research.

The first basis might be described as the selection of items of grammar for the purpose of producing scholarship in grammar. Such a procedure was thought to be worthwhile, for grammar was believed to have disciplinary values, to aid in the interpretation of literature, and to be essential for the study of other languages. To us today these claims seem to be merely *apologia* for an *apriori* decision. In 1903 Rice (34) disproved the disciplinary values of grammar. His study was followed by the more convincing one of Briggs (7) in 1913. Hoyt (19) in 1906 showed grammar to have no value in interpreting literature, and many studies since have shown grammar as an aid to the study of foreign languages to have been over emphasized.

Following this period came an age during which grammar was taught to produce better writing and speaking. Such studies as those by Boraas (6), Asker (1), Summers (40), Symonds (41), and Klopp (21) throw the burden of proof for this contention upon the one making it. To dis-

cover the items that should be taught to children to enable them to write more correctly and effectively, thousands of error counts have been made to determine what items children do not know. Such studies stand out as those made by Charters and Miller (9), Guiler (15) and others. Harap (16) summarized 33 of them made up to 1930. The most recent one, and the most stupendous by all odds, is the one made under the direction of O'Rourke (30), by which he tabulated the errors made by over a million children in all states. This study, made in the elementary school chiefly, is being continued into the secondary school. Criticism has been leveled against the error studies by those who believe that a valid selection of items to be taught cannot be made by finding out what errors children make in their writing. An illustration of the acceptance of the failure of these studies may be found in *An Experience Curriculum in English*, the new "pattern" course of study of the National Council of Teachers of English. At the beginning of their chapter on "Incidental Grammar" they say, "Because scientific investigations have failed to show the effectiveness of grammar in the elimination of usage errors, it is not here organized for that purpose."

Then the idea of functional grammar sprang up, based upon two concepts. Functional to some meant those items which could be used to prevent or to correct an error; to others it meant the grammar that each individual child found worthwhile in improving his writing and speaking. Studies followed. The one by Rivlin (35), the most complete we have had to date, sought the opinion of teachers on those items of grammar which seemed to possess values for correcting or preventing English errors, while the one by Newsome (28) was a subjective but interesting analysis of grammatical usages.

A third period followed during which research workers sought to determine the socially useful minima indispensable for everyday life. Thorndike (47) and Stormzand and O'Shea (39) counted language usages in the books and magazines read by most people. Greene (14), Betts (5), and Prehm (33) tabulated the rules given in style books and publishers manuals. Johnson (20) asked adults to indicate the "centers of expression" they used. Matravers (26), the Greater Chicago English Club (38), Franzen (11), and others examined compositions from adults, and from high school and college students. S. A. Leonard and Moffett (24), S. A. Leonard (25), Clapp (10), Searson (36), Barnes (3), and Pooley (32) made surveys of public opinion regarding current usage. Barnes (4) and Baker (2) surveyed the out-of-school language practices of children.

All of these workers sought through different means, and by the use of techniques of doubtful research validity, to discover the common social uses of language. These items, they reasoned, should form the content of the curriculum in grammar and composition.

The fourth and present period may be designated as the one during which curriculum workers are seeking to set up those socialized life activities which involve the use of language. Here the emphasis has been changed from a study of the grammar itself as a subject to the study of the child in his life activities. In analyzing this period one is immediately faced with the conclusion that the specifics of language selected here arise more from a philosophy of curriculum building than from a research program.

Some recent research, however, has guided or supplemented the thinking during this period, but most of the generalizations applied to the field of English have come from other fields. Such studies as the following command attention: McCarthy's (27) study of the language development of the pre-school child, Piaget's (31) studies in France, in which he asked the question "What are the needs which a child tends to satisfy when he talks," and which he answered in his work on the *Language and Thought of the Child*. The psychological work of Nice (29), who studied the development of sentence sense in children from sixteen to forty-three months of age, those of Hoppes (18) and of Harris (17), who worked with elementary school children, of Campbell (8), who wanted to know why children made errors with capitalization, and the excellent investigations of Frogner (12) and La Brant (22), who studied growth in sentence structure from grades seven through eleven, have all emphasized the newer trend in language studies and have made invaluable contributions to the thinking in this area.

More important than these studies, however, has been the influence of the curriculum builders who are thinking of the curriculum in terms of activities and social problems. They are advancing again the argument that language is an instrument of thinking and that the function of language is not merely to communicate, but to serve as a means of thinking. The child's language serves many more functions than that of expression. Language skills are demanded to advance activities designed to achieve broad aims of education. These curriculum workers urge that items of grammar be taught incidentally, and bring evidence to prove that such a procedure will produce efficient expression (Wrightstone, 48). They argue that language that is correct is one thing and expression that is

clear is quite another. They reason that some of the items of grammar may be taught to help the child improve his thinking with language, since these items are founded in thought and can be taught by reason. Other items produce mere conventional correctness and bear no relation to clarity or even to effectiveness. Such reasoning is in keeping with modern education, appears sound enough for curriculum construction, and requires that research keep pace by changing its emphasis of study and its techniques of investigation. So much for the means that have been and are now being used for selecting items or specifics of grammar for the curriculum.

The first base, was the attempt to place by grade items of grammar. This came along with the error studies. Such studies as those by Stormzand and O'Shea (39), Leonard (23), Symonds (42, 43, 44, 45, 46), Greene (13), in a series under his direction, and O'Rourke (30) have led the way in this matter of suggesting grade allocation of specific items of grammar on the basis of errors discovered. The influence of their evidence is reflected in the hundreds of courses of study in America which based their grade placement upon certain of these studies. However, the tremendous diversity of placement of the various items, pointed out by a number of studies, (Smith 37) indicates that either different studies were used in each locality or tremendous liberty was taken with the interpretation and use of the findings.

These studies based their contention upon estimates of the frequency and percentage of error, the difficulty of items, calculated in terms of percentage missing each item, the seriousness of errors, and the persistency of mistakes throughout the school period.

The second base used for placement of items had to do with the social use of language. With these studies arose the minimum essentials movement which suggested that there were essentials which every person used, that these could be determined by an analysis of the use of language in certain life situations, and that they could be placed correctly in the curriculum by subjectively deciding the level at which those social activities might be most generally used. The Wisconsin and Illinois English teachers proposed placements of grammatical items, using studies on social usage. Texts and courses of study figured as means of deciding upon grade allocation of items. Thus one error perpetuated another. The research on functional items combined with that on the social use, however, tended to eliminate many items formerly included.

The third base, and the one being used in modern courses today, seeks to place items in terms of the maturity of the child and the nature of the

activity participated in at a particular school level. Here the influence of modern philosophy and psychology is felt.

Before completing an analysis of this last point, we should mention that the interest has moved from definite placement into a particular grade to no grade placement whatsoever. In the earlier courses attempts were made to allocate definite items to each grade, in some instances to call these minimum essentials, and to require mastery of these items before promotion could be gained. This technique had to give way with the acceptance of the principle that language power is a process of continuous growth and not a matter of mastery of items by year. However, to jump from definite grade placement to no placement was more than teachers were ready for without undue supervision; so many courses sought to bridge the gap by grouping items into four three year periods, as is done in the new Texas course of study; or into two six year periods, as is done in the Experience curriculum of the National Council of Teachers of English and in the new course of study in Virginia. Such a change in the concept of placement is the natural outgrowth of the research in this field and of the modern philosophy of curriculum building. Grade placement based upon research has not been satisfactory, and errors persist in spite of an effort for correct placement and mastery. Modern education believes in meeting individual needs, in activity, in integration, and in functional centers of language, which are about as appropriate for one grade as another. Add to this the idea of growth and the picture becomes complete—a course of language specifics arranged in somewhat of a cycle plan based upon the increasing maturity of children and accompanying a set of activities.

Two factors have probably been influential in producing the present status of the selection and placement of items; the first is the inability of research in this field to be convincing, and the second is the newer philosophy which tends to discount exact measurement and to restore subjective analysis. No one who knows the field of English research has any confidence in the studies of the seriousness or difficulty of language specifics, of the items which have or have not functional value, of the correctness of the arrangement of items by grades, or of the best ways to fix language abilities. On the other hand the new principle of organization, that of beginning with the basal concepts of the sentence; the idea that children do not master grammar by the present selection and placement of items, the belief that life is an integrated process using associated learnings, the belief that we should change from a subject emphasis to a personal interest, and the determination to discover what language training the child

needs to meet the needs that a child tends to satisfy when he talks, are enticing positions. Many will accept them and others will doubt them, but they place all of us in a dilemma such as Robert Frost describes as two roads diverging, both leading into a woods.

In order that you may see the diversity and the character of the findings of the recent research into the newer methods of organizing and placing content in English, I have selected from studies at random some interesting findings and conclusions. They are herewith presented without identification or comments. They are influencing curriculum building; and if research is to be helpful in this field, it must devise means to check the validity of these beliefs, for many are little more than that.

Slight progress from grades 7 to 11 indicates the inability of the grammar method to produce correct expression.

Teach grammar from synthetic rather than from the analytic approach.

No significant relation exists between the knowledge of grammar and composition power. Grammar is necessary for putting together parts of speech but not for combining ideas.

There is little relation between the difficulty of a general principle of usage and the difficulty of individual applications of it.

Only the grammar which aids the understanding of the sentence should be taught first (below upper years of high school).

There are characteristic patterns of expression for every mental and chronological age.

Growth in language power is accompanied by an increased use of complex sentences (don't need grammar for this).

Errors do not occur by chance. Children frequently have better reasons for capitalizing words than do teachers who teach the conventional rules.

There is no relation between the use of sentences with dependent clauses and intelligence. The use of the complex sentence is a mark of maturity rather than of intelligence.

Good motivation is worth five sheer repetitions.

The quality of drill is more important than the quantity.

Independent, well motivated drill should supplement incidental teaching of language ability.

Material to be learned must be identifiable.

In four school systems children taught by the newer practices excel in reading, language ability, and in literary acquisition those taught by conventional procedures.

Modern language teachers want less English grammar than English teachers desire.

Such findings should challenge continued research. As our general point of view changes from a subject to an action pattern, our research

must change. Our subject research must give way to studies of personal growth. Unless we meet this challenge and get research closer to the classroom the sceptre will pass from science to philosophy.

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RECORDED SOUND IN THE FIELD OF ACHIEVEMENT TESTING

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THE PROBLEM

IN considering the feasibility of developing a technique for utilizing the sound disc or record in subject matter achievement testing, a number of questions which may well serve as criteria immediately suggest themselves. They are of significance because they are fundamental to a consideration of the whole question.

The first problem relates to validity. Can more representative measures of a given quality or quantity be discovered and developed into a recorded sound technique?

A second problem is that of improvability. Can selected elements of printed tests now in use be presented more effectively when in recorded form, than by the means now available, namely, the media of printed materials and the spoken words of an individual examiner?

A third major problem concerns practicability. Provided that the first and second criteria are met, will it be mechanically possible to arrange test materials so that they may be utilized within the practical limits of simple operation, cost, and economy of time and effort?

PROCEDURE

In a preliminary effort to gain insight into these problems, tests adapted from the Arithmetic Reasoning, Language Usage, and Spelling sections of the Modern School Achievement Test[1] were arranged in both recorded and in mimeographed form for experimental purposes in grades three to eight inclusive, with the exception of the spelling which was to be utilized in grades two to eight inclusive. The contents of both forms of the tests were identical, and both forms were administered to the same groups during a single testing period, except for a few classes whose schedules were interrupted by inclement weather. The pupils in grades three to seven were tested on consecutive days for the three subjects. All three tests, however, were administered to the seventh and eighth grade pupils during a single day, with appropriate rest periods between each subject. To equalize the teaching effect of both forms of the tests, their

[1] New York, Bureau of Publications, Teachers College, Columbia University, 1931.

order of administration was alternated with each group and subject. The response time for both forms was of the same duration.

The recorded form of the arithmetic test consisted of thirty-five oral arithmetic problems, each of which was repeated once. In arranging this test, twenty of the thirty-five problems in the Arithmetic Reasoning section of the Modern School Achievement Test were revised to reduce the complexity of their mechanical operations. The remaining fifteen problems were used in their original form. Both sides of three 10-inch discs provided ample space for the recordings. A total of 20′ 35″ was required for administering the test, allowing a ten-second response period between the statement of each problem. Twenty-five minutes are recommended for the administration of the test in its regular printed form. The pupils responded to the test, by solving the dictated problems in their minds and writing only their answers on the response sheet. The mimeographed form of this test was restricted to the printed statement of each problem together with adequate space on the paper for the pupil's calculations and the designation of his responses.

The language usage test was made up of fifty sentences recorded on both sides of two 10-inch discs. The sentences were selected and adapted from the sixty exercises in the language usage section of the Modern School Achievement Test. The ten sentences in the original test which did not readily lend themselves to recorded directions, and to single word responses were eliminated. In addition, two of the remaining fifty sentences were altered from their original form to overcome the same difficulty. The recorded and mimeographed forms of the tests, then, were made up of fifty sentences, each containing one error in construction. As with the arithmetic problems, the language exercises were dictated twice by the record and were simply stated in mimeographed form. The time required for administering the recorded form of the test was 9′ 55″. This included a seven-second response interval for each question. Ten minutes is the period of time specified for language usage in the Modern School battery.

The procedure followed for the recorded spelling test was about the same as is prescribed for the test in its original form. Each word was dictated, then used in a sentence, and the word was then repeated. The procedure was repeated by the writer dictating the words in lieu of a printed test form as was the case with the two other subjects. Incidentally, the writer's voice was reproduced in all the recorded test forms. The average time required for dictating fifty words from both sides of two ten-inch discs was ten minutes, compared to the fifteen minute period

indicated in the directions for the Modern School Test. Six seconds were allowed for the pupils to write each word.

The testing was done in a room familiar to all of the pupils. The tests were administered in recorded form by means of an electric phonograph. Only three cases of hearing difficulties were designated by the school authorities and these pupils were given seats immediately in front of the reproducer, where they reported the sounds to be clearly audible. Pupils throughout other sections of the room likewise reported clear audibility. This was also constantly checked by the teachers and the writer.

On first meeting each group, the writer carefully explained the purpose of the experiment, and emphasized that the results of the tests would in no way be used to the pupils' disadvantage. They were urged, however, to deliver their best efforts and to avoid glancing at their neighbors' papers. A wholesome coöperative attitude seemed to prevail among both teachers and pupils.

CHARACTER OF POPULATION TESTED

To secure a representative group for participation in the experiment, a school system in a town of some 36,000 population some twenty miles from New York City was chosen. Pupils of fourteen classes in an elementary school and four classes in a junior high school situated in middle-class neighborhoods were selected by the school authorities as being the most typical available. A total of 370 pupils from grades two to eight were involved. It is regrettable that no complete mental test data were to be had for comparison with the results of the experiment.

APPRAISAL OF TEST REQUIREMENTS

At this point it may be well to analyze the two forms of the tests employed to determine wherein they differed with respect to the measurement of separate or combination skills and abilities.

In the case of the recorded arithmetic test, it is recognized that the response requirements were of a different nature than those required by the mimeographed form of the test. The pupil was required to give his undivided attention to the dictated statement of the problem. He then had to remember the details of each problem; while determining relationships and the operations necessary for its solution. The novelty of the testing situation together with the unaccustomed demands upon his attention and memory, also, no doubt, influenced his success in solving the problem. On the other hand, no reading ability was involved which

should have been to the pupil's advantage wherever reading difficulty existed. It is apparent then, that skills and abilities not usually measured by the printed arithmetic test were called into play with the oral or recorded test.

The recorded language test likewise made demands upon the pupil's auditory attention and memory. It was necessary for him to listen to the two statements of the sentence; then to remember the sentence while he detected and corrected the single error in its structure. As with the oral arithmetic test reading ability and other visual elements were not present. Whether or not the abilities to detect language errors in printed or oral form differ in their constituents should be attested by the results of the experiment.

The recorded spelling test differs little from the procedure regularly followed in the timed sentence spelling testing method. The only difference which did exist was that the words and sentences were presented by mechanical means instead of by the spoken words of an individual examiner. Whether this is of significance likewise can be determined by the test results.

In general, it may be said that the recorded tests assured absolute uniformity with respect to directions and time limits, and that they were free from the personal idiosyncracies of more than one examiner. Personal poise, self control, adherence to directions, rhythmic and inflectional patterns of the voice, and emotional factors, all conditioning the pupil's response, were held constant.

Where speed was a factor of success in responding to the test question, the more capable student was penalized by being required to wait for a subsequent dictation after he had perhaps finished responding to the previous dictation. Then, too, if the reproduction was not constantly perfect; if it decreased in quality as the record became worn, the pupil would have been subjected to an unfair handicap.

With these factors in mind the results of the experiment will now be considered. The accompanying table presents the statistical outcomes of the investigation. The first column of each section indicates the test variables with respect to time and the number of problems and words for each grade. The N column designates the number of cases at each grade level. The other headings are explained by the following:

R_r —Range of scores on recorded test
R_p —Range of scores on paper test
M_r —Mean score on recorded test
M_p —Mean score on paper test

Med_r —Median score on recorded test
Med_p —Median score on paper test
$S.D._r$ —Standard deviation of recorded test scores
$S.D._p$ —Standard deviation of paper test scores
S.E. diff. —Standard error of differences between mean scores of recorded and paper tests
D_m —Actual difference between mean scores of recorded and paper tests
C.R. —Critical Ratio $\left(\text{Quotient of } \frac{D_m}{\text{S.E. diff.}}\right)$
Favors —Tendency to favor recorded or paper test
Chances —Chances in 100 that differences noted are greater than zero
Self R_r —Self correlation of recorded test
Self P_r —Self correlation of paper test

INTERPRETATION OF RESULTS

If the achievement means of the two test forms are valid criteria, it seems that the pupils in question were able to detect errors in spoken language more readily than they could with the test in printed form. The results are not conclusive, however, since in grades three and five the paper tests yielded the higher means. The totals, nevertheless, indicate a tendency in favor of the test means in recorded form, although the critical ratio is only 1.00.

The reliability of all the tests was determined by correlating the odd-even items of the seventy to eighty papers selected at random for each subject. The tests both in recorded and mimeographed form seem equally reliable judging from the correlation coefficients obtained. These coefficients, however, were influenced to a great extent by the small number of questions in the tests.

LANGUAGE STATISTICAL SUMMARY

Variable	Grade	N	R_r	R_p	M_r	M_p	Med_r	Med_p	$S.D._r$	$S.D._p$	S.E. diff.	D_m	C.R.	Favors	Chances
6 min.	3	38	0-13	0-13	4.68	8.37	3.79	5.73	3.68	3.08	0.78	3.69	4.73	Paper	100
12 min.	4	57	1-31	1-33	15.70	14.05	14.86	16.20	5.66	6.04	1.09	1.65	2.08	Record	98
12 min.	5	63	2-29	4-33	17.76	19.63	18.57	18.46	5.40	5.44	0.97	1.87	1.93	Paper	97
12 min.	6	68	4-39	1-35	24.06	19.56	21.92	22.90	6.22	6.60	1.08	4.50	4.17	Record	100
20 min.	7	58	6-39	8-37	24.66	21.55	25.40	24.50	6.98	6.48	1.25	3.11	2.49	Record	99
20 min.	8	51	10-41	12-41	29.47	28.69	28.57	28.66	5.56	6.42	1.19	0.78	0.66	Record	74
	Total	335	0-41	0-41	22.48	21.79	20.17	20.13	8.99	9.00	0.69	0.69	1.00	Record	84

Self $R_r = .98 \pm .0032$ Self $P_r = .98 \pm .0032$ (73 cases at random)

ARITHMETIC STATISTICAL SUMMARY

Variable	Grade	N	R_r	R_p	M_r	M_p	Med_r	Med_p	$S.D._r$	$S.D._p$	S.E. diff.	D_m	C.R.	Favors	Chances
13 probs. 20 probs.	3	39	0–5	0–5	2.79	2.74	3.24	3.30	1.34	1.38	0.96	0.05	0.05	Record	52
	4	61	1–15	1–23	6.57	13.00	7.20	8.75	3.34	4.78	1.20	6.43	5.36	Paper	100
27 probs. 27 probs.	5	60	2–21	2–31	14.70	18.13	11.17	17.50	4.62	6.14	1.18	3.43	2.90	Paper	99.8
	6	65	4–29	8–33	14.75	18.68	14.43	18.53	5.48	5.36	0.83	3.93	4.73	Paper	100
37 probs. 37 probs.	7	56	4–33	3–35	18.58	25.74	25.00	30.25	7.78	7.22	1.41	7.16	5.08	Paper	100
	8	51	14–35	18–35	28.85	31.03	30.40	31.80	4.60	3.70	0.82	2.18	2.66	Paper	99.5
	Total	332	0–35	0–35	18.84	19.51	13.24	19.56	9.94	10.78	0.81	0.67	0.83	Paper	80

Self $R_r = .99 \pm .0030$ Self $P_r = .99 \pm .0030$ (79 cases at random)

SPELLING STATISTICAL SUMMARY

Variable	Grade	N	R_r	R_p	M_r	M_p	Med_r	Med_p	$S.D._r$	$S.D._p$	S.E. diff.	D_m	C.R.	Favors	Chances
25 words	2	48	0–25	0–19	4.42	4.87	4.00	4.00	4.24	4.26	0.87	0.45	0.52	Paper	69
20 words	3	35	0–19	6–19	10.83	12.66	11.14	11.50	3.80	2.02	0.73	1.83	2.51	Paper	99.4
50 words	4	55	12–57*	18–45	32.49	30.89	32.57	31.17	11.20	9.76	2.08	1.60	0.77	Record	79
50 words	5	58	20–57	26–59	47.45	46.24	43.17	44.13	8.48	8.02	1.44	1.21	0.84	Record	80
50 words	6	65	26–67	26–69	47.99	47.43	53.00	54.28	9.24	8.70	1.48	0.56	0.38	Record	65
50 words	7	58	30–69	42–69	57.14	60.07	58.33	60.62	8.54	7.86	1.47	2.93	1.99	Paper	98
50 words	8	51	40–71	44–71	60.94	62.61	64.67	65.43	6.16	6.66	1.26	1.67	1.32	Paper	90
	Total	370	0–71	0–71	29.74	28.68	45.00	47.65	20.96	22.64	1.60	1.68	1.05	Record	85

Self $R_r = .98 \pm .0049$ Self $P_r = .98 \pm .0049$ (83 cases at random)

*Credit is given for words assumed to be known for the lower grades in accordance with procedure followed in scoring the Modern School Achievement Test.

A different picture from the language results is drawn by the figures for the arithmetic tests. Here with the exception of grade three, the critical ratios are high enough for individual grades to warrant the conclusion that the pupils did better with the paper and pencil tests on this subject. This effect is destroyed, however, by the figures for the total scores where the critical ratio is only 0.83, and the chances only 80 in 100 that a true difference exists.

In four of the seven grade groups tested in spelling, the results favor the paper and pencil tests, but none conclusively. The total figures seem to indicate a slight difference in favor of the disc, but it is not significant statistically.

The medians and standard deviations suggest no extreme variation in responses to either form of the tests for the three subjects.

All in all, the data are rather indecisive. They may be indicative of what may be expected from future experimentation in the subjects tested, but they need verification.

Regarding the problems raised at the beginning of the study it seems that the recorded test may measure ability areas not now evaluated by

the printed test. It is also reasonable to predict that recorded sound may improve upon certain parts of printed tests now in use but additional research will be necessary to determine just how this may be done. Empirically, it may be said that tests in recorded form are economically practical, since after the test's validity and reliability have been established, a single record, costing but a few cents may be used almost indefinitely in place of more expensive printed test blanks. There is no danger, however, of the recorded test entirely replacing the printed test. If the field is developed it will be necessary to prepare pupils, teachers and examiners for a different type of reacting to the test situation than they now experience. The majority of the pupils in this experiment expressed a preference for the paper and pencil tests. This is probably due to the more rigorous attention and immediate memory requirements of the recorded test.

SUGGESTIONS FOR FUTURE RESEARCH

In addition to extended research in the fields touched by this study, it would be profitable to investigate the possibilities of recorded sound in other subject matter fields.

The social studies offer several opportunities for research and experimentation with recorded sound. One pertains to a consideration of the social studies from the fusion viewpoint. This would involve the dramatization and reproduction of social experiences on the sound disc. As an example, a testing unit could be devised on the Southern states wherein elements of history, civics, geography were woven into a complete narrative on which the student would be questioned after the disc had been played. The questions would be based more upon the teaching objectives of each subject rather than content, and deal not so much with the informational outcomes of study, but with the correlated factors important for an understanding of human activity. Combined with the subject matter which had been studied, the information in the narrative would complete the data from which the student could draw deductions, generalizations, and detailed opinions concerning social phenomena.

A second type of research would treat in more detail the factors of individual subjects. Thus in Civics, a short dramalog could be enacted around a community enterprise such as an election. The student could be called upon to provide information relative to problems arising from the election. Or, a dramalog might be built around the Northeastern manufacturing industry as a geography unit, and geographical features empha-

sized throughout, the student being required to respond to questions about products of the region, exports, imports, transportation facilities, population and the like. Similarly, historical materials could be recorded and questions relating to past and present conditions developed.

In the realm of foreign language testing, oral elements offer a fertile area for exploration. The factors of accentuation and enunciation could be arranged in scale form and their merits reacted to by the student. Descriptive material by authoritative spokesmen also could be recorded for interpretation. Then the matter of oral language errors can be investigated in a manner similar to that reported for English in this article.

In conclusion, recorded sound may be developed to represent a substantial contribution to the field of achievement testing. With sounds playing the part they do in human intercourse, it seems that testing situations more representative of life situations may be conceived, and additional research seems justified in light of the data and suggestions herein reported. It is also likely that the sound disc may be employed in the field of intelligence testing. An analysis of environmental sounds and relationships has already been made toward this end, and the findings together possibly with experimental data will be reported shortly.

EDITORIAL

WHAT SHOULD TEACHERS KNOW ABOUT STATISTICS, MEASUREMENTS, AND SCIENTIFIC TECHNIQUES?

With the growing insistence upon teacher participation in the formulation of school policies and the apparent progress in the democratization of school administration, the training of teachers in the methods of scientific problem solving would seem today to assume a new importance. When the more important decisions of education, such as those relating to the formulation of educational policies, making courses of study, choosing instructional materials, and constructing tests were made by administrative and supervisory officials and educational "experts" there was really very little opportunity for the teachers to use the methods of scientific problem solving. Many leaders in the science of education of a quarter of a century ago may even have envisaged some sort of a scientific autocracy modeled upon the scientific management movement of big business of that time. Even to-day many teachers, possibly by habit, training, and inertia, expect, and even sometimes prefer, to have their thinking done by others. As teachers, supervisors, and administrative officials become more interested, however, in the important problems of education and the democratic inter-relationships involved in their solution there will be need for more training of the teacher in the methods of scientific problem solving.

The purpose of this editorial is merely to ask questions. To begin with, it should probably be recalled that teachers may be both producers and consumers of research. First, then, what do teachers need to know about statistics, measurements, and scientific techniques so that they may be intelligent consumers of research? I suspect that one answer to this question might be found in an analysis of the content of educational journals, monographs, and books containing materials of the more technical sort. Obviously there are quite a few journals, monographs, and books containing materials of value to teachers for which they do not now have the technical equipment to read and understand. There would doubtless be more materials of this sort if the audience of teacher readers were larger and more appreciative, and there doubtless will be more as

education passes from the rule-to-be-followed stage to intelligent pupil management and to the scientific study of pupil learning. If one cared to, one might arrange the literature in the field of education in some sort of ascending scale of technical difficulty and determine what one should know about statistics, measurements, and scientific techniques in order to understand the literature which is presented at different levels of technical difficulty.

In considering the teachers as a producer of research it seems necessary, even to-day, to urge in some quarters a justification of the teachers' efforts in this direction. Some persons seem to believe that all fundamental research should be done in the college or university laboratory; and that principals, supervisors, and superintendents should determine the appropriateness of such research for local school purposes; and that teachers should follow regulations laid down by the administration. The import of this for democratic school administration has already been referred to. Aside from this there is, however, a more important reason why a different approach to educational management should be considered, namely, because the problems of teachers cannot be solved by university professors and laboratories. These studies have a contribution to make, an important one I hope, but they can never solve the particular day by day problems of teachers. Highly simplified versions of problems of the sort that confront teachers are sometimes solved in laboratories but never the teacher's own particular problems. The logical fallacy of current thought in this respect is very real and important. However poorly trained the present generation of teachers may be for this responsibility, the next generation of teachers should be better trained. This problem will doubtless be more adequately cared for as teaching approaches a higher professional status.

To return to the asking of questions, if teachers are to have training in this respect one would need to know more than we ordinarily do about the kinds of problems that teachers may be called upon to solve in their work as teachers, and more about the kinds of statistics, measurements, and scientific techniques that they will need to know to solve these problems. What then are the kinds of educational problems that confront teachers in their normal activities as teachers and for which they need more technical training to reach satisfactory solutions? Some of these problems will doubtless relate to the curriculum and objectives, some to problems of learning and teaching, some to materials of instruction, and some to means of appraisal. If possible one should know not merely the problems sensed by the teacher in the present order but those that they

do not sense. Also, in a changing social order with changing means, methods, and materials there will doubtless be other problems that have not as yet arisen. Can these be anticipated? If one knew these and other problems that confront teachers, then one might determine the statistics, measurements and scientific techniques that teachers should know to solve these problems or at least to think about them more effectively. It would seem possible thus to come to some sort of a first answer to the question here proposed. There are, however, other questions that need to be raised and answered before any final answer to the questions here proposed can be reached: Would teachers so trained be more efficient or less efficient than those not so trained? Would they be happier? Would the school system with the largest number of teachers thus trained be the most efficient? etc. In considering a curricular problem of this sort one would need to consider not merely its theoretical aspects and the analyses suggested by these considerations, but the practical outcomes of the program in operation. What would be the effects of such training upon the teachers themselves? What changes would probably be necessary in school organization and administration to accommodate the new type teacher? How much would these changes cost? Most teachers to-day are trained in routine procedures and every day teaching formulae. What would be the effects upon the pupils of having teachers more expertly trained; of having teachers who could approach the problems of teaching more openmindedly, and who would be more thoughtfully considerate of the individual pupil? What would be the effects of such a group of teachers in the community, particularly if the training in seeing and solving educational problems carried over to other more general social problems? There are many other questions that one might ask. Such apparently naive answers to the questions here raised as that teachers cannot be expected to engage in high grade technical thinking; teachers already have too much work for them to engage in creative thinking and problem solving; and the teacher training program is already over crowded, should not be accepted as adequate answers without careful consideration.

A. S. BARR

REVIEWS

Address all communications relative to book reviews to Editor Kai Jensen, University of Wisconsin, Madison, Wisconsin.

WILLIAMSON, E. G. *Students and Occupations* (New York: Henry Holt & Company, 1937), pp. xxiv + 437. $2.50.

The preface of the book sets the general tone with a plea for a realistic attitude toward vocational opportunities. They are limited, especially in the professions which comprise only 7 percent of the gainfully employed. The author hopes to avoid inferiority feelings created by this mad race toward professional careers and emphasizes the social importance of diverting low aptitude individuals from such careers.

As to procedure, he stresses the importance of expert guidance and decries over-emphasis of self-guidance. "Educators enthrone the shibboleth of self-analysis." The other professions dealing with individual adjustment provide expert help for the individual. The present book is designed to contribute such individual help in the vocational field. The author's own experience leads him to suggest merely the choice of a broad field inasmuch as occupations may be grouped into families according to their necessary qualifications. This broad choice will help in the selection of an appropriate general preparatory course. A preface to the teacher suggests an outline for term papers which the students may prepare, including description of a field, necessary qualifications, the individual's own qualifications and the social and economic importance of the job.

The first three chapters set the stage for the detailed consideration of a considerable number of specific occupational fields. An initial consideration is the advisability of attending college. Stress is laid on "education for living" in contrast to mere vocational education. Four-fifths of the workers in the country are doing work which does not require a college education although such education may help them in other ways. Attention is called to some of the difficulties encountered in a college program, the amount of time devoted to study, etc. This frank discussion should cause the high school reader to consider carefully the problem of whether to go to college.

The second Chapter is perhaps the most important in the book as it outlines for the student the process of making a vocational choice. The negative aspect is stressed again to the effect that most people steer for the sky without determining whether they have wings. Another negative contribution is the listing of "stumbling blocks," such as the attractiveness of remote things, the white collar illusion, the fallacies in mere occupational labels, the assumption of equal ability for many occupations and even the pseudo-techniques which are to be avoided. A brief but pointed outline of the methods of choosing a vocation follows. This includes try-out experiences, vocational information, observational trips, hobbies, interests, advice of parents or friends, and vocational tests. Stress is wisely given to the need for an expert for administering such tests. Quite

analogous to the expert competence necessary for a physician in making physical diagnosis. The recommended procedure includes diagnosis of aptitudes through life history, tests and interviews, tentative choice of a broad field where the aptitudes can be used most effectively and a subsequent choice of a specific vocation within this larger field that can be made only after experience, maturity and observation. This procedure is scientifically sound. The reviewer merely wonders how adequate is the supply of vocational Counselors who can handle problems in this way. The reader then gets some notion of the abilities with respect to which people differ and possible occupational implications of these abilities. The discussion includes such abilities as verbal, scientific, mathematical, clerical, mechanical, social. Some excerpts are presented from the conventional occupational hierarchy as related to intelligence. Such a list might be dangerous in some contexts but in the present is entirely legitimate. The procedure is clarified by two brief case studies, which yield profiles in terms of tests and school performance.

The third Chapter attempts a brief overview of the major fields of the world's work and gives some notion as to the proportion of the population engaged in the different types of work. A conservative effort is made to project occupational trends into the future.

The remainder of the book, which constitutes the greater portion, considers in separate chapters, major classes of occupations. In each instance there is a discussion of the opportunities in the occupation, the training necessary as a requisite to entering it, qualifications necessary on the part of the individual and in most instances a notion as to possible earnings. Each chapter is followed by a series of references which give more information about the occupation in question. These references should prove one of the most useful features of the book. The broad classes of occupations include medicine, engineering, chemistry, agriculture, forestry, home economics, teaching, business, law, journalism, social welfare, ministry, library, art, industry, personal service and public service. These main topics naturally come in for considerable sub-division. In the business field, for example, organization charts are presented to indicate the number of minor occupations in a large business organization. Note is taken of future trends which may affect the opportunities in a field such as the problems that may grow out of socialized medicine. Some readers will question the inclusion of an occasional occupation which meets with the disapproval of persons who are equipped to evaluate it. For instance, chiropractic and osteopathy are mentioned briefly although the author does indicate that they are "not accepted" by the medical profession. Some misconceptions regarding vocations are corrected, for example, the notion that a lawyer's principal duties consist of giving orations in court. With many of the occupations, the two sexes are discussed separately.

The book is aimed mainly at occupations in the upper part of the hierarchy. One chapter is devoted to "skilled workers in industrial occupations." This chapter covers that field briefly and along the same lines as in the other chapters. However, in view of the fact that nine tenths of the book deals with occupations held by less than one-fifth of the population, it might be well to play up these industrial aspects to a little greater extent. For instance, the chapter just mentioned occurs toward the end of the book. An earlier emphasis on these occupations and their opportunities and perhaps a little more effort to "sell" these occupations by emphasizing interesting aspects

and remuneration would seem advisable. If the students who use the book are already selected to some extent, well and good. If they are hoi polloi, the discussion may tend to defeat the book's initial motif of forestalling aspirations toward careers higher in the social scale than are warranted by aptitudes.

The book should fill a useful place. While it is technical in spots, most of it is in language that a high school student can understand. It might well serve as the basis for courses on occupations. It will also be valuable as a handbook for the vocational counsellor. Persons preparing for a career in guidance should read it as part of their background.

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PRESSEY, SIDNEY L., AND JANNEY, J. ELLIOTT. *Casebook of Research in Educational Psychology* (New York: Harper and Bros., 1937), pp. xvii + 432. $2.00.

SCHROEDER, PAUL L., AND OTHERS. *Child Guidance Procedures* (New York: D. Appleton-Century Company, 1937), pp. vi + 362. $2.50.

WILSON, ROBERT S. *The Short Contact in Social Case Work* (New York: National Association for Travelers Aid and Transient Service, 1937), Vol. I, pp. x + 201, $1.50; Vol. II, pp. viii + 219. $1.50. ($2.50 per set.)

The case approach has been applied in two ways in the field of education: (1) to facilitate the organization and presentation of teaching materials, like in law and medicine, and (2) as a research method, like in sociology and social work.

Pressey and Janney's book of readings in educational psychology is an illustration of the first application of the case method mentioned above. The purpose is: (1) to stimulate interest by illustrating the range of studies in this field, (2) to give some understanding of research methods, (3) to encourage use of professional journals, and (4) to show the practical and functional possibilities of research in psychology. The central themes around which the readings are grouped are: health, interests and incentives, social adjustment and emotional stress, intelligence, individual differences, measurement, types of learning, efficiency in learning, attitudes and character traits, transfer of training, fatigue, and the results of schooling. Each group of readings is accompanied by an introductory and a concluding statement. This source book will be of service to the undergraduate rather than the graduate student, since the latter should become familiar with such materials in their original settings. The reviewer has the distinct impression that a far better understanding of research methods would be possible, had an introductory or concluding chapter outlined briefly the major investigational procedures, citing illustrations from or cross-references to the readings themselves.

The book, *Child Guidance Procedures*, shows the application of the case method to research and child adjustment in an Institute for Juvenile Research (Chicago). Part I discusses child guidance in terms of the nature and needs of childhood, as well as the variety of problems represented. Part II deals with diagnosis: organization of the clinic, social history, medical study, psychological examination, recreation study, psychiatric interview, and synthesis and program of therapy. Part III presents illustrative cases of problems requiring adjustment and guidance, interference with the child's opportunity to grow; failure to support the child's dependency; failure of proper direction, training, or control; and constitutional inadequacy of the child. Concluding chapters discuss the

relation between the clinic and community, and the future outlook for the child-guidance clinic. The book is clearly and simply written for students, physicians, teachers, social workers, court workers, and recreation leaders rather than clinical psychologists who have access to more advanced treatises.

An application of the case method to the area of Travelers Aid and Transient Service is found in the two volumes entitled, *The Short Contact in Social Case-work*. The first volume states the general theory and application of time-limited relationships in social work: defining the short contact, the philosophy and technique of time-limited relationships, and the short contact in Travelers Aid and Transient Service and in public assistance programs. The appendices include brief outlines of the use of the short contact by the medical social worker and the home economist, and an eight-page bibliography. The second volume consists of a series of twenty-five short contact cases grouped as follows: (1) with treatment plan completed in time-limited contact, (2) preliminary to transfer of responsibility to another agency, (3) short-time treatment relationships within extended care cases, (4) applications rejected by the agency or withdrawn by applicant, and (5) incidental service. This type of social work presents a real challenge to case work skills in terms of individualized service and counseling, as well as research and study. Since contacts limited by time are not confined to work with travelers and transients, these two volumes will be of significance to the whole field of social case work, both public and private. Many of the principles and cases summarized should prove helpful to educational workers charged with responsibility for guidance and adjustment.

CARTER V. GOOD
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ELLIOTT, ORRIN LESLIE. *Stanford University: The First Twenty-Five Years* (Stanford University: Stanford University Press, 1937), pp. xiii + 624. $3.00.

Mr. Elliott has successfully completed a very difficult task. He has taken a local story and written in such a way that it will be interesting to a nation-wide reading public. Mr. Elliott was the first Registrar of the new University on the Pacific Coast — a University which was heralded as a new venture in many phases of college administration. It was being started wholly independent of any of the traditions which cling to the old and established schools. Moreover the new school was intimately associated with the name of a rich man, who was endowing the institution with riches to an amount, as President Eliot of Harvard wrote, equal to four times what any modern school should need.

Mr. Elliott writes a fascinating account of the many problems, large and small, which arose during those early days. For example, he gives the inside story of the struggles to start the college town at Palo Alto, the opposition of Mrs. Stanford to the installation of telephones in the University offices and the use of "horseless carriages" on the campus. He gives in detail the struggles which followed the earthquake in 1906. He gives a rather complete account of the trouble which resulted in the dismissal of Dr. E. A. Ross, the eminent sociologist, from the faculty in 1900. He describes in detail the sacrifices of the faculty during the "Six Pretty Long Years" and "The Stone Age." All this and much more the author describes so vividly that former Stanford students can actually feel that they are themselves a part of the story.

But Dr. Elliott does more than write an authentic story for Stanfordites. He succeeds in presenting the local situation in

such a way that fundamental problems of university administration are clearly seen. For example, the chapters on Choosing a Faculty, The Major-subject System, The Problem of Liquor, Reforming the Curriculum, The Junior College, and The University and the Public, contain material which has a definite relation to university life in 1937.

The book is worthy of careful study by college men and women everywhere.

CURTIS MERRIMAN
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CENTER, STELLA S., AND PERSONS, GLADYS L. *Teaching High-School Students to Read: A Study of Retardation in Reading* (New York: D. Appleton-Century Company, 1937), pp. xviii + 167. $2.25.

In the last two or three years increasing interest in reading in the high school has been evidenced through the publication of various articles and textbooks. The most pretentious report of remedial reading in the high school, one of the publications sponsored by The National Council of the Teachers of English, *Teaching High School Students to Read*, serves two purposes: (1) it reports an extensive experiment; and (2) it presents a new philosophy of teaching reading in the high school.

This monograph serves to reveal more concretely what many have also discovered; the large range of abilities in reading which are present among entering pupils in the large cosmopolitan high schools of our cities. This same condition exists in high schools almost everywhere. What does it mean?

Among other things it means that the secondary school is becoming acutely conscious of a condition which has been made crucial by the growing non-selective character of the institution. Thousands of boys and girls, defective in reading as well as in general intelligence, are being promoted to high schools. Many of these pupils have reading levels of less than eighth grade. This reading level is insufficient to insure success in the studies of the senior high school. Either reading levels must be raised or curricular changes must be made.

The study in review reports an experiment in which an attempt was made to raise the reading levels of entering pupils in the Theodore Roosevelt High School, a co-educational institution in New York registering over 7,000 students.

Administration of the Terman Group Test of Mental Ability to incoming ninth grade classes since 1934, revealed that the population in this school is skewed in mental ability toward the lower levels, although not badly. In reading ability, assuming that ninth grade ability in reading is essential to success in high school, these pupils were retarded also, 64.5 percent being below ninth grade in reading skill, 25 percent at and below sixth grade as measured by the New Stanford and Haggerty reading tests. On other tests, the retardation was on the average 50 percent. A large portion of these pupils were retarded definitely below their mental grade levels.

The monograph does not reveal whether the reading experiment which followed was started because there were available from the Civil Works Administration thirty teachers who could be assigned for remedial work; but at any rate, the experiment was made possible because these unemployed teachers could be used. They were assigned to the English department and were trained for the experimental program in daily conference hours throughout the progress of the experiment. Approximately 500 pupils were selected for remedial treatment. They were divided into seven groups. The pupils were taught in small groups of five

or less, and sometimes as individuals. During the experiment these pupils received all their instruction in English in the remedial classes. Materials for reading, factual in content and attractive in style, were chosen from contemporary writings and adapted for use in the experiment.

The results of the experiment are set forth in detail in the report with due attention to adequate statistical analysis quite unusual in departments of English. The remedial work showed, like all remedial work, the greatest gains in the earlier periods of remedial instruction, greater gains among the brighter pupils, and arrested development after marked individual gains had been made. Marked improvement in reading, as measured by the Iowa Advanced Examination and other tests, was achieved. But to have raised all the pupils to their grade levels in reading would have been a miracle.

Since the experiment was a one-group experiment, the authors had no way to tell whether the advances made in reading were all that were possible. It is possible that many of these pupils reached the upper limits of their potential reading power. These achievements still left them ranging between fifth grade and ninth grade in reading ability, which suggests, as many are beginning to believe, that instruction of backward pupils in high school, who are limited in reading power, must be in terms of materials with reading difficulty not above the seventh grade.

In chapter six of the report, the authors attempt to show the effects of the remedial program in reading upon the general scholarship of the pupils, with results disappointing to themselves and to those others who hope to raise scholarship through general training in reading. The pupils in the "Reading School" failed to make noticeable improvement in scholarship. The authors then rightly criticize the school as "a high school organized for a limited section of society, those of the caliber called *potential college material.*" Failure in such a school seems to be the portion of those limited in ability.

The remainder of the report devotes itself to a discussion of leisure reading for backward pupils, case studies, the qualifications of the remedial teacher of reading, etc. The final chapter, a "Resulting Philosophy," expounds the authors' conclusion that the English department must become a department responsible for training students in reading skills, on various levels and according to their needs. Education for child development thus becomes the function of the department of English as of other departments in a democratic high school.

On the whole the monograph is a stimulating document. While such an experiment may not be carried on in every high school because of lack of remedial teachers, the conclusions of the experiment are obviously significant for all. To the writer, the monograph reveals a tendency which is quite reassuring to those interested in the use of scientific method in education. Departments of English have not been noted in the past for their use of reading tests and statistical method. Are they about to make use of these devices?

The style of the monograph is not the restrained factual style of the scientific report. It has warmth at times, if not the heat of propaganda. But that, the writer thinks, is a distinct gain. May many departments of English profit by reading this well written monograph! The National Council of the Teachers of English is to be congratulated for sponsoring so worthy a volume.

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BOGOSLOVSKY, B. B. *The Ideal School* (New York: The Macmillan Company, 1936), pp. xii + 525. $2.50.

It is refreshing to find again a writer on educational practice who is not afraid to step out on the limb of his imagination and dare the philistine to saw off his support; a writer also who dares to think for himself on educational matters instead of attempting to let Science do his thinking for him.

The form of presentation in this case is as daring as the ideas. The fictional conversations, the inspection committee visiting the five divisions of the ideal school, and even the fictional conversion of the educational progressive to educational personalism may not carry conviction; but they contrast pleasantly with the usual array of tables and statistics. Mr. Bogoslovsky is intellectually sophisticated, realizing clearly that scientific data attain meaning and significance only as they relate to a thoroughgoing and critical philosophy.

It is impossible to summarize the book in a short review. At best, a very few of the major ideas can be indicated.

The negative criticism of prevalent educational practices in both traditional and progressive schools is well taken. The most basic idea criticized is that the aim of education is adjustment. Although William James long since slew this dragon, his tracks still contaminate the educational scene on both sides of the issue.

Perhaps the second most important criticism of educational practices is of the timidity of educators in making use of the machine for routine work to relieve the teacher and pupil for creative endeavor. There is no shortage of suggestive remedies for this deficiency in *The Ideal School.*

As the aim of education, Mr. Bogoslovsky would substitute social reconstruction towards the end of the development of a high type of personality. It would be a pleasant task to list the stimulating and valuable suggestions which are made in connection with this aim and the means of realizing it. Unfortunately a more important task is called for. For the prevalence of excellent ideas may tend to blind the reader to the fundamental weakness which permeates the organization of all of these suggestions. In a word, it is their undemocratic import. The author seems to realize this but also seems to dismiss the question as a mere verbal matter.

The reason for this import is clear enough to one familiar with Mr. Dewey's criticism of the philosophical tradition. It is the traditional dualism—a subject dismissed again as more or less verbal—which is at the basis of our whole educational system and which gains emphasis in *The Ideal School* in the following closely related disjunctions.

(1) Culture (art, literature, religion, philosophy, etc.) versus civilization (economics, communications, techniques, etc.). In this instance — may the shades of Socrates slumber here! — words from Dewey are educed (p. 233) in support of the claim.

(2) Culture versus science.

(3) Personality versus environment.

(4) Evaluative judgments versus intellectual judgments.

(5) Ends versus Means.

(6) Contemplation versus activity. Contemplation is considered to be an activity, as indeed it is, but it is set in sharp contrast with other activities because of the failure of the author to realize that knowledge and appreciation are as much matters of manipulation as of contemplation. The same confusion lodges in the identification of the Socratic "Know thyself" with introspection.

The undemocratic nature of the edu-

cative philosophy of personalism rests in the fact that it is based upon an authoritative or absolutistic metaphysics. If the ethical meaning of democracy is responsibility for self-government (in the broad sense of "government"), then whatever its working philosophy turns out to be, it must be one sufficiently relative to allow its participants to take responsibility themselves for their ultimate beliefs.

The traditional dualism which requires an authoritative philosophy is also at the basis of the conflict between science and religion which threatens to annihilate both and to prevent the realization of a social democracy. But the conflict is left intact here and apparently unknowingly.

For in spite of the professed relativism of the whole approach, an absolutistic metaphysics is admittedly presupposed. And in so-doing the author presupposes a place for science which, as a description of the universe, is subordinate to an inner intuition of ultimate reality. This bitter conflict will not be resolved by an appeal to an appearance-reality philosophy, whichever realm is assigned to science or to religion. Both must sacrifice their claims to having the final authority of ultimate reality on their side and must acknowledge the locus of all truth to be in *human* experience. The function of both will then be seen to be the determination and fulfilling of rich human living.

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MAYHEW, KATHERINE CAMP, AND EDWARDS, ANNA CAMP. *The Dewey School: The Laboratory School of the University of Chicago. 1896-1903* (New York: D. Appleton-Century Company, 1936), pp. xvi + 489. $2.50.

Sometimes as an outsider and sometimes as a participant the reviewer has observed with interest the efforts of contemporary American educators to achieve a unification of theory and practice. It is a joyful, almost a hopeful task, therefore, to call the readers' attention to the *Dewey School*. For this book stands out in at least one mind as the most important work in education since *Democracy and Education* and perhaps since *Emile*. The tragedy is that in so many instances where the book is not entirely overlooked it will be read with the usual casual interest afforded, not always unjustly, the ordinary book on education.

The unique feature of this book can perhaps be stated as follows: It demonstrates, by illustrating, *the possibility and actuality of guidance in education without indoctrination*.

In regard to the child it recognizes "a psychological and biological distinction between the child and the adult" which reveals the lie in the idea of "little men and women" (p. 250). But at the same time it sees "that the conditions which make for mental and moral progress are the same for the child as for the adult" (p. 251). The paradox of this situation was resolved in the theory and practice of the Dewey School by active and thorough coöperation, not easily achieved, among administrators, teachers, parents, and pupils; a coöperation made difficult not by any unwillingness on the part of those concerned but because it aimed at sharing and participation instead of at division for conquest. Consequently the school was child centered without being child dominated. Furthermore, the guidance afforded was not that of a pre-existent or rigid plan but of a dynamic philosophy continuously in the process of being made by all concerned, including parents, teachers, and pupils. The child was not given responsibility, and responsibility was not withheld from him. Rather he was guided into the achieving of responsibility which increased nat-

urally with the growth of his capacity for the active awareness of the social consequences of his actions.

The school was not "scientific" in the prescientific sense of the term which dominates so much futile effort to be scientific in education today in both progressive and traditional schools. Science as taught was not fundamentally distinguished from sciences as practiced throughout all activities in the school including art. The viciousness of the dualism which separates art from science was clearly recognized, and—what was indeed a great victory—it was partially overcome. Science was not used as a new authority for setting up new codes and creeds: "It secured freedom from deadening routine for both teachers and children by constantly opening new fields for thought and action" (p. 430). There was no attempt to shift responsibility for decisions from the shoulders of pupils, parents, teachers, or administrators to the shoulders of "Science." But science was used as an instrument for achieving more effective responsibility.

No review of this book can serve as its substitute in the experience of any one concerned with education. For it would be impossible to summarize its descriptions of the continuous educational attack on the conflicts of our social environment. In all but a very few minor details it is as relevant both for theory and practice to our educational problems today as to those of 1896-1904, and it is the most relevant treatment the reviewer has seen. Its use of vocational activities without separating vocation and culture, its use of overt muscular activity to achieve the more complex activities of abstract thought, its use of child interests to develop, by adequate guidance, richer child interests in a direction which would yield harmony rather than conflict with future adult duties and a capacity for the rich enjoyment of these duties, its teaching of tool subjects without separating mean and ends, its scientific use of the concepts of value, and its valuable use of the concept of science—these are but a few of the achievements of the Dewey School which the book demonstrates to be universally attainable.

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BASON, CECILIA HATRICK. *Study of the Homeland and Civilization in the Elementary Schools of Germany: With Special Reference to the Education of Teachers.* Contributions to Education, No. 710 (New York: Bureau of Publications, Teachers College, Columbia University, 1937), pp. iv + 165. $1.85.

To the American student of comparative education this volume will be a valuable record of current practices in an important field of education in the schools of Nazi Germany. It deals with the nature, organization, and use of the local environment and civilization (Heimatkunde) in the curricula of the German elementary schools and institutions for the preparation of teachers. Certain recommendations are presented for the improvement of this type of work in our own schools and teacher training institutions.

The report covers the last three quarters of a century, including the periods of the Empire, the Republic, and the first three and one half years of the Third Reich. The meaning of the term *Heimatkunde* is discussed with reference to various concepts held by leaders in that field of study at different times, and the relation of this subject to the political and social life of the nation. There is included a discussion of the development of the elementary school and the part it has played through the ages in bringing

about the extreme nationalism that characterizes the Germany of today. It is made clear that for generations the nation has used the schools as a means of developing knowledge of the native land and of developing and preserving certain attitudes toward those in authority and toward the country itself.

The study reports the results of an analysis of official decrees, educational documents, and courses of study for the major states of the republic and the writings of many leading German educators of the period. A very interesting and valuable part of this book is a series of reports of observed lessons showing how the program operates in the schools. The author visited selected schools in all parts of Germany, both urban and rural, regular and experimental. Numerous conferences were held. Scores of textbooks and other materials of instruction were examined. The net result is a very revealing picture of the situation. The study makes clear the fact that "the periods of greatest emphasis on the study of the homeland followed periods of internal weakness and distress." The value of the excursion and the field trip as methods of instruction is well presented. This report should be of great value to those who are interested in the development of the excursion as an effective means of instruction. An analysis of the reports of lessons will show the steps that have been used in the planning of excursions and field trips, a program that was found in many widely separated places.

The implications for teacher training are very significant. Instead of the emphasis on formal academic subject matter characteristic of American teacher training curricula, increasing emphasis in the training of the elementary school teachers in Germany is placed on the study of those aspects of life that will help the teachers to make the program of *Heimatkunde* a rich effective one. Through participation in suitable activities the teachers are taught an appreciation of the procedures and their possibilities. The general instructional program does not stress the mastery by children of materials found in the textbooks, as is so often the case in this country. Emphasis is placed on learning through direct contact and through the mastery of ideas presented by a thoroughly trained teacher, who is competent to discuss the topics being considered. The author judged this program of teacher training to be a very effective one. Tendencies in this direction are found in various places in this country where an attempt is being made to reorganize the curriculum on a more functional basis.

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RESEARCH NEWS and COMMUNICATIONS

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

Study of Teacher Education.—A five-year study of teacher education has been launched by the American Council on Education. It will be financed through a grant of $200,000 by the General Education Board. Special projects growing out of the general study will, it is expected, necessitate further subsidy. The work will be directed from the headquarters of the Council at Washington by Karl W. Bigelow who has been granted leave of absence for this purpose from his professorship of education at Teachers College, Columbia University. Payson Smith of Harvard University, and formerly commissioner of education for Massachusetts, has been appointed chairman of the special commission which will advise the director.

The new project grows out of a preliminary inquiry into the problems of teacher education made, during the past two years, by a special subcommittee of the Council's Committee on Problems and Plans. The report of this subcommittee, of which Dr. Smith was chairman, has just been published as one of the American Council on Education Studies under the title, "Major Issues in Teacher Education." It forecasts the character of the project now under way in its recommendations that: "(1) the utmost ingenious collaboration be exercised to draw into this study all of those associations and institutions whose experienced judgments may contribute to the solution of the problems involved; (2) ample funds be secured to make possible a nation-wide study which will have wise judgments on the part of a governing committee or commission, skillful staff direction, and cogent interpretation of findings which will be translated into procedures in practice as rapidly as may be."

Dr. Bigelow, the newly appointed director of the project, received his Ph.D. degree from Harvard. He has taught economics and sociology at Cornell, Harvard, Radcliffe, and the University of Buffalo. He was for two years headmaster of the Park School of Buffalo, and has been associated with the Commission on Secondary School Curriculum of the Progressive Education Association. He joined the staff of Teachers College in 1936, but during the past semester has been on leave, acting as consultant to the General Education Board and observing work being done in the teaching of the social studies in general education.

This information was provided by George F. Zook, president of the Council.

Committee on Awards.—This committee was created by the American Educational Research Association at its meeting on February 20, 1937. Following the procedure indicated in the resolution approved by the Association, nominations of outstanding researches were secured from the members of the committees which prepared the numbers of the *Review of Educational Research* for 1936. The nominations for each of the five fields were sub-

mitted to groups of judges for evaluation. These judges were also asked to make additional nominations. Each piece of research was examined by one or more members of the committee.

The Committee on Awards gave consideration to 35 nominations: 3 in the field of mental and physical development; 7 in pupil personnel, guidance, and counselling; 3 in psychology of learning, general methods of teaching, and supervision; 14 in history of education and comparative education; and 7 in mental hygiene and adjustment. One study was nominated for two fields. The number of judges reporting ratings in these fields varied from 9 to 13. The committee was impressed by their substantial agreement. None of the studies selected received the highest possible rating by *all* judges, but the average of the ratings indicated that these studies should be recognized as outstanding.

The members of the committee are: Carter Alexander, Bess Goodykoontz, and Walter S. Monroe (Chairman). The fields represented by the following awards are mental development, psychology of learning, history of education, and mental hygiene.

Bayley, Nancy. *Mental Growth During the First Three Years: A Developmental Study of Sixty-One Children by Repeated Tests.* Genetic Psychology Monographs, Vol. 14, No. 1 (Worcester, Mass.: Clark University Press, 1933), pp. 92.

Brenner, Benjamin. *Effect of Immediate and Delayed Praise and Blame upon Learning and Recall.* Contributions to Education, No. 620 (New York: Teachers College, Columbia University, 1934), pp. 52.

Curti, Merle. *The Social Ideas of American Educators.* Report of the Commission on the Social Studies, American Historical Association, Part X (New York: Charles Scribner's Sons, 1935), pp. 613.

Morison, Samuel Eliot. *The Founding of Harvard College.* (Cambridge, Mass.: Harvard University Press, 1935), pp. 472.

Morison, Samuel Eliot. *Harvard College in the Seventeenth Century.* (Cambridge, Mass.: Harvard University Press, 1936), 2 vols.

Jersild, Arthur T., and Holmes, Frances B. *Children's Fears.* Child Development Monographs, No. 20 (New York: Teachers College, Columbia University, 1935), pp. 356.

Yearbook on Coöperation.—The Department of Supervisors and Directors of Instruction, N.E.A., has set a committee at work preparing a yearbook on coöperation. The yearbook should prove of value not only to the profession but to the thinking world generally. It is evident that in our social evolution we have reached a stage of development where individual effort can no longer be counted upon to solve the many complex problems of interrelationship which arise in every field of human endeavor.

It is imperative that we learn how to "work together" as creatively and as efficiently as we are now able to achieve individually. The whole world, from the League of Nations down, pleads for coöperation, talks coöperation, believes in coöperation, but never stops to ask what coöperation is, or how it is to be achieved. The committee will attempt to answer both of these important questions.

The yearbook is to consist of three parts. Part I will deal with the philosophical and historical aspects of the problem. It will array the present social

scene, analyze it into its elements, and try to prove the need for a new social program built upon coöperation as a cornerstone. It will interpret man's upward struggle to show how various techniques of working together have paved the way for the next step of advance and how much of coöperative living has already been achieved. Then, because the emphasis of the yearbook is educational, the implications for education will be discussed and the task of the school in preparing for the new era by teaching coöperation will be outlined.

Part II will deal with the practical aspects of the problem. Through questionnaires the facts will be obtained as to teachers' present conceptions of coöperation and their present activities for developing in children skill in working together. One of the first activities of the committee was to issue a bulletin of suggestions to teachers,[1] and hundreds of teachers throughout the country are now trying experiments along the new lines. Reports of these and similar activities by administrators and supervisors will give life and vitality to the theoretical principles discussed in Part I.

Part III will be devoted to appraisal. It is planned to submit the completed Parts I and II to educational leaders of various schools of thought and to print for the benefit of all their reactions and comments. It is important that, at the outset of what promises to be a long-time program of development, all aspects of the problem be canvassed and the pathway to progress outlined as clearly as possible. The committee will welcome from anyone and from everywhere reports of past achievements in developing or using coöperation, suggestions for strengthening the yearbook, offers of assistance in research and experimentation, and similar expressions of interest and support for this attempt to meet one of our most pressing social and educational needs.

Chicago Department of Education.—A modification has been made in the requirements for the Master's degree in education at the University of Chicago. An alternative plan substitutes for the thesis an acceptable paper or report showing ability to select, integrate, and evaluate data with respect to some educational problem or procedure, and requires the passing of an additional course entitled "Critique of Educational Literature." The new plan for the Master's degree does not indicate any lessening of the emphasis which the Department has traditionally placed on research. Rather, it indicates a recognition of the needs of students of two more or less distinct types, those who are to be "producers of research," and those who are to be "consumers of research."

Beginning October 1, 1938, Ralph W. Tyler of Ohio State University will become head of the department of education and chief examiner of the board of examinations of the University of Chicago. The retirement of Charles H. Judd as head of the department of education will become effective in June when he reaches the retirement age after a long period of distinguished service at Chicago beginning in 1909.

Minnesota Doctorates.—C. S. Peterson of Baltimore reports that Charles Burke Elliott in 1888 received the first Ph.D. (history) granted by the University of Minnesota. From 1888 to 1932 a total of 643 doctorate degrees were granted, of which 85 were in philosophy, psychology, child welfare, and education. Forty-eight such degrees were awarded in education, the first in 1917; 28 in psychology, the first in 1893.

[1] *Teachers and Coöperation.* Price 25c. May be obtained from S. A. Courtis, School of Education, University of Michigan, Ann Arbor, Michigan, who prepared the present statement.

Oakland Studies. — Recent bulletins from the research and curriculum department of the Oakland schools are entitled: "Report on the Holding Power of the Oakland Public Schools, 1937-38;" "Results of Low-Second Grade Mental Tests, Fall Semester, 1937;" "Results of Low-Fourth Grade Mental and Reading Tests, Fall Semester, 1937;" "Results of High-Sixth Grade Mental and Reading Tests, Fall Semester, 1937;" and "Results of High-Ninth Grade Mental and Reading Tests, Fall Semester, 1937."

Score Card for Term Reports.—W. M. Willey of Western Kentucky State Teachers College suggests the following score card for evaluating undergraduate term reports.

I. General Interest and Value of the Topic
   A. Will the study prove of interest and benefit to those who read it or hear it read?
   B. Has it been of value to the writer? To the class?

II. Size and General Make-up of the Report
   A. How many pages?
   B. How many chapters?
   C. What is the written style with respect to smoothness and clarity of expression?
   D. Is it typed or legibly written?

III. The Mechanical Characteristics of the Report
   A. Does the author call attention to related studies?
   B. How much space is devoted to tabular and graphical materials?
   C. Are the data interpreted?
   D. Is the problem defined accurately and limited?
   E. Are the methods of the investigation indicated?
   F. How were the data secured?
   G. Is the study based upon opinion or fact?
   H. Are practical applications suggested?
   I. Are further studies suggested?
   J. What statistical methods are used?
   K. Is a summary or conclusion given?

IV. Final Evaluation of the Report
   A. From a broad standpoint, just what does the report connote?
   B. What value is the report for future use?
   C. Is the author able to discuss the report intelligently and with interest?

Dean of Women.—In an effort to determine the desirable functions of a dean of women in five different types of institutions, carefully constructed questionnaires were sent by M. Eunice Hilton of Syracuse University to competent judges in large universities, normal schools and teachers colleges, large denominational colleges, small denominational colleges, public junior colleges, and women's colleges. These judges were administrators at the heads of the particular types of institutions and deans of women in the same types of institutions. Each group of administrators and deans was selected with an eye to geographical distribution and according to exacting criteria with regard to experience, contributions to the field, publications, and recognition within their fields. Their opinions are presented as a symposium of what experienced people see as the possibilities of the position. A composite ranking of the answers found the functions of working with personality adjustments of girls, supervising college social life, supervising housing of women students, and discipline indispensable to the dean of women in every type of institution. The administrators placed supervision of social life above working with personality adjustments; the deans of

women were of the opposite opinion. The functions of keeping employment records for graduates, selecting faculty, and securing and selecting students were not considered necessary to the dean of women in any type of institution. Other functions were considered desirable where not cared for in other ways.

Iowa Child Welfare Research. — Research in child development at the Iowa Child Welfare Research Station during 1936-1937 was conducted in the following fields: (1) nutrition, (2) anthropometry and physical growth, (3) child psychology including studies in infant psychology, mental development, motor development, personality and social development, and art psychology, (4) preschool education, (5) parent education, (6) character education, and (7) speech pathology.

1. Among the studies in nutrition of the past year, the following are cited as typical examples: "The Influence of Acetylsalicylic Acid (Aspirin) on the Urinary Ascorbic Acid," "A Study of the Utilization and Retention of Vitamin B1 by Young Children," "The Relation of Ascorbic Acid Ingestion to Mineral Metabolism of Children," "The Relation of Physiological Age and Bone Pattern to Mineral Metabolism in Children," and "A Quantitative Study by Means of Spectrographic Analysis of the Trace Elements in Nutrition."

2. This year has been spent largely upon the refining of several relatively long-time problems. One of the most practical and applied sets of studies has centered around the anthropometric appraisement of physical status. This has involved studies to determine which of all the anthropometric measurements available best lend themselves to such appraisement. The next step has been to devise methods of objectively determining bodily type. A second area of studies in physical growth is an analysis of the different types of growth. A third sector of research has been concerned with certain problems of growth in body size. The study of changes in body proportions during infancy and the preschool years has constituted a fourth sector of research.

Typical studies in anthropometry and physical growth are: "Anatomic Age and Its Relation to Stature," "X-ray Studies of Innate Differences in Straight and Curved Spines," "The Reliability of Anthropometric Measurements Taken on Eight- and Nine-Year-Old White Males," "Changes in Body Proportions During Infancy and the Preschool Years," and "The Transverse Growth of the Extremities."

3. Child psychology is interpreted to include the problems of mental, motor, aesthetic, personality and social development, and infant psychology.

Two sectors of research in the field of mental development are: (1) long-time studies of the permanence of early training effects on intellectual growth and (2) the mental development of children from underprivileged homes in relation to environmental differences. The first group of researches leads to the conclusion that acceleration in intelligence during the preschool ages leaves an imprint on development for many years to come. In the second series of researches, children from homes representative of the level below the lowest quartile of society have been studied under widely differing environmental opportunities, one group placed in infancy in average and superior foster homes and the other remaining in their own underprivileged homes for varying lengths of time. These studies have been carried on coöperatively through the Iowa Board of Control of State Institutions and the Iowa Child Welfare Research Station.

Typical studies in the field of mental development are: "An Analytical Study of Language Achievement in Young Children," "The Role of Cultural Status in Intelligence Changes of Preschool Children," "Mental Development of Children in Foster Homes," and "The Mental Development of Children from Underprivileged Homes."

Examples of studies in personality and social development are: "Experiments in Frustration and Regression in Children," "Speed as Measurement of Motivation," "The Level of Aspiration in Manic-Depressive Manics and Manic-Depressive Depressives," and "A Study of Ascendant Behavior in a Play Group."

The experimental work of the Station on the behavior of infants has assumed two broad directions. On the one hand, investigations have been conducted on neonatal activities, and on the other, the transformation of some neonatal response patterns has been followed through for several years. Some of the current problems which are being conducted with newborn infants are: "Vision in Infancy: The Nature of Dark Adaptation in Infants," and "Relations Between Reflex Time and Conduction Rate in the Achilles Arc to Age."

4. This field of research is primarily concerned with the effects of environment upon the mental, emotional, and social growth of the child of preschool age. Its major problem is that of discovering how best to direct the environment in order to secure optimum results.

Three major approaches are involved: (1) the formulation of the objectives of growth, (2) devising of measures of development, and (3) study of the effects upon children of specific environmental modifications. Typical problems in preschool education are: "A Study of Picture Preferences of Preschool Children," "A Comparative Study of Nursery School and Non-Nursery School Children," "The Construction of an Achievement Scale of Behavior in Regard to Personal and Property Rights," "The Effects of the Mid-Morning Rest Period Upon the Behavior of Nursery School Children," and "The Effect of Training Children to Face Difficult Situations."

5. The research program in parent education is based upon the conception that it is possible to control effectively the growth and modification of behavior only when the behavior at any given moment is recognized as the product of several factors. Measuring instruments are needed for all the important factors.

Perhaps a contribution to effective parenthood can be made through a program of education in understanding and directing self-development (such a program being administered before the close of the formal school period). Furthermore, education in understanding and directing self-development might be a powerful aid in preventing maladjustments. Can the individual learn to take the reins with respect to the fundamentals of his own development before he leaves school? What contribution would such an education make to the foundation for effective parenthood and to the prevention of maladjustments? Moreover the understanding and recognition of the "changing probability" or dynamic character of any generalization is essential for effective application.

Thus all research in this area is related to the problem of development and learning at the upper age levels and should eventuate in contributions, not only to the practice of parent education but also to a knowledge of child and adult development.

Typical studies in parent education which have recently been completed or are still in progress are: "The Effect of a Learning Program Designed to De-

velop a Dynamic Concept of Knowledge," "A Study of the Effect of Certain Factors in the Home Environment Upon Adjustment," "Preparation of a Manual on the Use of Radio for Parents," "The Measurement of Growth in Self-Direction and Its Modification," and "The Study of the Influence of Parental Methods Upon the Development of Resourcefulness."

6. In the field of character education recent researches have followed two general lines: (1) analyses of the psychosociological conditions associated with overt delinquency and other types of maladjustment, and (2) analyses of social development.

Delinquents, tested for the smoothness of response in word-association, showed greater delay in verbal response and greater disturbance in voluntary motor behavior than nondelinquents. The longer the stay in one institution the greater this disturbance became. These and other findings suggest that the delinquent is functioning at a less integrated level than the nondelinquent. Delinquent boys also answered questions of a personality type in a manner more similar to adult criminals and manic-depressive psychotics than did nondelinquent boys.

In the field of social development the following findings are typical. A factor analysis of thirty social "traits" suggests that these characteristics tend, in preschool children, to cluster about two principal axes, "approach-withdrawal" and "ascendance-submission." When "approach-withdrawal" was studied over a period of a school year, however, in a group of kindergarten children, the relative standing of individual children in the group tended to change markedly with time.

Typical studies in character education conducted at the Station during 1936-37 are: "The Effect of the Stimulus Word Used Upon Scores in the Association-Motor Test," "Disorganization of Mental Functions in the Delinquent," "The Individual Profile in the Association-Motor Test," and "The Incidence of Certain Etiological and Symptomatic Factors Among a Group of Delinquents."

7. Typical studies in speech pathology are: "Relation of Bilingualism to Stuttering," "Symptomatologies of Young Stutterers," "Birth and Early Developmental Conditions of Stutterers and Their Nonstuttering Siblings," "The Effect of Specified Psychological Conflicts Upon the Speech of Preschool-Age Children," and "The Study of the Onset and Early Development of Stuttering."

This statement was prepared by George D. Stoddard and Dorothy E. Bradbury of the Station.

Qualifications of Teachers in West Virginia. — The Research Division of the State Department of Education of West Virginia has recently completed a study of the qualifications of elementary school teachers in West Virginia. In this investigation frequent reference was made to a measure called the "Index of Certification." These indexes were computed by assigning certain arbitrary values to certificates, the latter being classified in four types: I, consisting of those certificates secured by examination, the holders of which possess little or no professional training; II, certificates secured upon the completion of at least one year of college work; III, certificates requiring at least two years of college work; and IV, the bachelor's degree. Type IV was assigned an arbitrary value of three; Type III, two; Type II, one; and Type I, nothing, the arbitrary values being assigned according to the rank in collegiate education. The percentage of teachers teaching on each type of certificate was then multiplied by the arbitrary value assigned

to the type, the sum of these products being divided by 3 in order to reduce the scale to 100 percent if the index were perfect, or less if it were not. The following formula, in which a, b, and c represent the number of Types IV, III, and II certificates, respectively, and n the total number of teachers, illustrates a shorter method of calculation:

$$\frac{3a \text{ plus } 2b \text{ plus } c}{3n} = \text{I.C., or the Index of Certification}$$

Such a formula resolves teacher qualifications into one number affected by the qualifications of all teachers.

A summary of the state tendencies for certain years is as follows:

Years	Index	Gains	Losses
1928-29	35		
1929-30	42	7	
1930-31	37		5
1931-32	39	2	
1932-33	40	1	
1933-34	44	4	
1934-35	47	3	
1935-36	52	5	
1936-37	55	3	

It is evident that under the old method of distributing state aid, when the local unit was the district, gains of seven, two, and one, were made, but in 1930-31, five points were lost, the entire net gain being then only five points. On the other hand, since the inception of the county unit, with the state shouldering much of the additional cost of employing well qualified teachers, gains of four, three, five, and three totalling fifteen were registered, with no losses. Comparing the four year period of the new system, 1933-1937, with the four year period of the old, 1929-1933, one notes that the former shows a net gain of fifteen, while the latter shows a net gain of only five. There is no doubt that the present system of distributing state aid has had a good effect upon teacher qualifications in the elementary school through its potentiality in permitting employing boards to better the professional status of their teachers without adding to the burden of local tax payers.

This information was contributed by Richard E. Hyde, Director of Research.

THE PUBLIC SCHOOL CORRELATED ATTAINMENT SCALES

What is the attainment of a pupil in terms of his growing ability to learn?

What is accomplished in class instruction through maintained interest and through effort for success?

* * *

WHEN an examination is to answer those two questions, it is necessary that growing aptitude for learning the subjects of school instruction be measured at the same time—and in like units—as subject attainment is measured.

Both these questions are answered in the *Public School Correlated Attainment Scales* by a scale (reprinted on next page) on which all scores refer directly to the percent scale of growing ability, as this ability increases from year to year through the elementary school course.

There is an important relation of growing ability to attainment. The correlated scale for this examination for pupils in grades 5 to 9 is based on the scale for the chronological ages of school pupils extending from the age of seven to that of seventeen. This range in years covers the period of the growing mental ability which is measured by a group of three aptitude tests provided as a part of the examination and given at the same time with the attainment tests. A scale covering ten years is required to measure the natural difference in time of growth for those individual pupils with slow mental growth as compared with those who have a rapid rate of mental development. The ten-year scale provides for a measure of abilities beginning at seven years of age, and it allows ten points on the scale for the growth in each year up to a possible perfect score for seventeen years. This upper limit provides for the measure of very bright pupils who may make that score at fourteen or fifteen years of chronological age. In other words, an average pupil lives and moves and has his being and grows in ability and advances in subject attainment at a uniform rate for each year. This growth is measured beginning with that of second grade, or when the pupil is seven, and arrives at the beginning of his fourteenth year with an advance to 70% of the possible ability and of the attainment for the brightest mind at that age; the slow mind may reach but 60% or even but 50% at fourteen years of age.

SCALE

Chronological Age Scale	Grade Level for Aptitude Age	Reference Scale
(1)	(2)	(3)
17–9		
17–6		
17–3		
17–0	12.0	100
16–9		
16–6	11.5	95
16–3		
16–0	11.0	90
15–9		
15–6	10.5	85
15–3		
15–0	10.0	80
14–9		
14–6	9.5	75
14–3		
14–0	9.0	70
13–9		
13–6	8.5	65
13–3		
13–0	8.0	60
12–9		
12–6	7.5	55
12–3		
12–0	7.0	50
11–9		
11–6	6.5	45
11–3		
11–0	6.0	40
10–9		
10–6	5.5	35
10–3		
10–0	5.0	30
9–9		
9–6	4.5	25
9–3		
9–0	4.0	20
8–9		
8–6	3.5	15
8–3		
8–0	3.0	10
7–9		
7–6	2.5	5
7–3		
7–0	2.0	0

On the scale, as set up in this examination, the percent—or correlated—score for the end of eighth grade is seventy. This agrees closely with the median attainment found on the standardized tests that have been given throughout the nation to pupils on the course as now provided.

The *Public School Correlated Attainment Scales* give standardized attainment scores for the grades from the fifth to the ninth which are measured in the same units as are the scores made by a pupil for his own rate of growth in ability. No longer need you guess at this relation!

To put it another way, these scales give a direct measurement of the educational results of teaching in the elementary schools. The attainment in the subjects of study of every pupil in every classroom can be measured on the same scale by which the pupil demonstrates his or her development of those learning aptitudes upon which readiness for learning depends.

On this scale every score refers directly to the chronological age in years and months.

The record for any pupil of a class, therefore, gives his attainment in the topics tested in the like units of the measures of his native ability and in like relation to his chronological age.

This is the true measure of his work, as it is affected: (a) by teaching; (b) by the course of study and instructional materials; (c) by his native ability; and (d) by his chronological age of experience. Every pupil's record stands on its own feet and the work of the class, as affected by the various age and instructional conditions, is truly measured. The *Public School Correlated Attainment Scales*—by adding to a standardization obtained from the records of other schools a record of aptitude and age conditions—give you a more complete and more nearly true measure of the real success of teacher and pupils than is possible with the ordinary test.

How Two Scales Are Correlated

Two distinct conditions are needed for school success.

One is that of the growing abilities or aptitudes for school work which naturally developed at some-

what different rates for different children. These rates of growth are measured by the psychologist by an examination which is concerned with the ability of a given mind to meet certain significant experiences of life with, as nearly as may be, little or no reference to training or instruction. The psychologist has determined, by wide testing of many individuals at every preadolescent chronological age, the score on his "intelligence test" that gives a measure of the median natural abilities or aptitudes for any given chronological age. This scale of mental ages represents the ability of the median individual at every age in his growth toward maturity. For every age this scale gives the score which is the median of both the bright and slow minds at that age. On the *Public School Correlated Attainment Scales* this scale of ability is that of the chronological ages from seven to seventeen. This range of ages provides a score for pupils in fifth to ninth grades who may be very slow and for those who may be very bright.

The other condition needed for school success is attainment due to school instruction. A valid attainment test covers those situations which are included in the commonly used course of study. The range of chronological ages for attainment ability provides also for the scores of school attainment in grades five to nine differing from that of the slowest pupil to that of the brightest. For the *Public School Correlated Attainment Scales* the range of ten years from seven to seventeen years is divided into ten parts, every part representing one-tenth of the full attainment that should be made to master the entire elementary course of study as it is now presented. The pupils of median ability do not now make an attainment of 100% of the present school course of study by the age of fourteen. From the results of all valid attainment tests—that is, tests that cover the work presented in elementary school textbooks—we know that the median attainment, or standardized score, for the end of the eighth grade is always close to seventy percent of the perfect score on the test.

One of these seven parts of this seventy percent is what is accepted for the work of the median pupil for any one of the seven grades from the second to the ninth.

The extensive records now available on the three forms of the *Public School Correlated Attainment Scales* show definitely that this situation is true as measured by these scales, when used in the fifth to the ninth grades. These records show also that the correlated scale provides for the record of attainment of very bright pupils who attain eighty or even

ninety percent on the scale and of slow pupils who in fifth grade attain in some topics as low as twenty-five percent.

This percent scale is, of course, the scale into which all point scores on the tests, either for natural aptitude or for attainment, are converted. To illustrate the way it is made and used:

1st, the total number of points obtainable on any one test is taken as one hundred percent on the correlated scale; 2nd, the score in points actually obtained on a test is entered on the record as its part of one hundred per-cent. For instance, a score of 20 points, made on a test that has a possible total of 40 points, is fifty percent on the correlated scale. (See the age reference scale on page two.)

A copy of the new Form C of the Public School Correlated Attainment Scale will be sent free on request to the

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